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COMMONWEALTH BUREAU OF ANIMAL HEALTH

THE

VETERINARY BULLETIN

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DISEASES CAUSED BY BACTERIA AND FUNGI

CHAPMAN, G. H. (1946.) **The staphylococci.**—*Trans. N.Y. Acad. Sci.* Ser. II. 9. 52-55. 1

C. stresses the confusion which exists in the taxonomy of the staphylococci and outlines the characteristics of the pathogenic types. A medium and technique for the isolation of pathogenic staphylococci are described.

—ANGUS FOGGIE.

DONALD, L. G. & MANN, S. O. (1950) ***Streptococcus pneumoniae* infection in calves.**—*Vet. Rec.* 62. 257-258. 2

Of a group of young Ayrshire calves, four, varying in age from five days to four weeks, died suddenly. P.M. examination was made of two of the calves ; in one there was diffuse inflammation of the small intestine ; the peritoneal cavity of the second contained a small quantity of brown turbid fluid. *Str. pneumoniae* type 111 was recovered in culture from the heart blood, the spleen and the liver of each of the two calves. Milk samples from the lactating cows in the herd concerned were negative for *Str. pneumoniae.* The same organism was also demonstrated in another calf, from different premises, which died suddenly at the age of two weeks.—E. COTCHIN.

VALLÉE, A. & CHARBONNER, R. (1949.) Maladie des veaux, dite "rate caoutchouc". **["Rubber spleen," a disease of calves caused by *Str. pneumoniae.*]**—*Rec. Méd. vét.* 125. 466-467. 3

Cases of "rubber spleen" in calves caused by pneumococcal infection have previously been reported from Germany and Italy. This case is reported from France. A calf died after four days' illness the symptoms being dyspnoea and diarrhoea. On P.M. examination, pleurisy with costal adhesions, abundant pericardial effusion and severe congestion of the tissues round the umbilical vessels were observed. The mesenteric glands were haemorrhagic and the spleen was hypertrophied with subcapsular haemorrhages and had a rubbery consistency unlike the findings in other types of calf diarrhoea. A pneumococcus belonging serologically to group xxiii was isolated from all lesions. The rubbery consistency of the spleen was due to changes in the pulp, in which invasion of the cytoplasm of the cells by a fibrinous mass was demonstrated.

—J. A. NICHOLSON.

ANON. (1950.) **Streptococcal endocarditis in cattle.**—*Irish Vet. J.* 4. 96-97. 4

The Pathology Department of the Veterinary College of Dublin has observed a number of cases of streptococcal endocarditis which indicate that this condition is not infrequent among cattle in Ireland. It was suggested that practitioners should bear it in mind in cases of heart disease simulating traumatic pericarditis and in cases of sudden death. Only by careful auscultation of the heart sounds can the diagnosis be reasonably established during life. Descriptions of the macroscopic heart lesions of 14 cases which were proved bacteriologically to be due to streptococcal infection are included in the report.—L. M. JONES.

PATTISON, I. H. (1949.) **The pathogenicity for mice of group B streptococci of bovine origin.**—*J. Hyg., Camb.* 47. 159-165. 5

P. considered that some modification was necessary in the generally held opinion that this group is of low lethal power. A relation exists between lethal power and the number of viable organisms.

Intravenous inoculation may be slower in its effect than intraperitoneal although one strain gave a rapidly fatal peritonitis.

—MALCOLM WOODBINE.

BOISSARD, J. M. & WORMALD, P. J. (1950.) **A new group of haemolytic streptococci for which the designation "group O" is proposed.**—*J. Path. Bact.* 62. 37-41. 6

A number of serologically identical streptococci were isolated, mainly from throats, which

gave β-haemolysis on horse-blood agar, but a negative test for soluble haemolysin. β-haemolysis did not occur under anaerobic conditions, thus sharply contrasting these strains with *Str. pyogenes*. The authors suggest that these strains be included in the Lancefield series as type O.—A. MAYR-HARTING.

TURNBULL, P. (1950.) **Some remarks on mastitis in the bovine subject, with particular reference to acute interstitial mastitis due to strains of** *Staphylococcus aureus*.—*Vet. Rec.* **62.** 255-256. **7**

T. described the syndrome of acute staphylococcal mastitis in cattle. The frequency of wound infection as the cause of the condition is stressed. The local reaction is interstitial in character, the inflammatory swelling being closely adherent to the skin, a characteristic which, along with the differences in the odour of the discharges, differentiates staphylococcal mastitis from *Corynebacterium pyogenes* mastitis.

Note is made of the failure of cases of staphylococcal mastitis to respond to intramammary injection of penicillin and a technique for the parenteral administration of the drug in described. Success is claimed for this method of treatment except in advanced cases.

—ANGUS FOGGIE.

BAUMGARTNER, H. (1948.) Die Behandlung von Euterkrankheiten mit Penicillinstiften. **[Treatment of mastitis with penicillin.]** —*Schweiz. Arch. Tierheilk.* **90.** 313-318. **8**

B. described the treatment of 13 quarters infected with streptococcal mastitis with crystalline penicillin, which was introduced into the teat canal by means of non-expendable, perforated light-alloy cylinders of suitable dimensions, the results being stated to be good.

—G. P. MARSHALL.

BELL, W. B. (1950.) *Vibrio foetus* **infection in Virginia.**—*J. Amer. vet. med. Ass.* **116.** 36-37. **9**

The isolation of *V. foetus* from the stomach contents of twin foetuses aborted at three months has established the presence of the organism in cattle in the state of Virginia. The herd from which it was isolated had been shown to be free from *Br. abortus*, *Trichomonas foetus* and other pathogenic micro-organisms, but had a history of abortions occurring from the third to the sixth month of pregnancy, in most cases, followed by a normal gestation with no further interference in breeding. Studies were made of six other herds in which breeding troubles were present. Positive agglutination tests for *V. foetus* and the clinical manifestations of the infection indicated that *V. foetus* was a contributing factor to the trouble in these herds.

—L. M. JONES.

STAUB, A. M., PRUDHOMME, R. O. & GRABAR, P. (1946.) Recherches immunochimiques sur la bactéridie charbonneuse. V.—Les nucléoprotéides. **[*Bacillus anthracis*, immunological studies. V. The nucleoproteins.]** —*Ann. Inst. Pasteur.* **72.** 58-66. **10**

The specific precipitate obtained when anti-anthrax pseudoglobulins are mixed with extracts of *B. anthracis* does not contain nucleic acid : so-called "nucleoproteins" are absent. These results are similar to those obtained for other bacterial species. The existence of "nucleoproteins" as such is discussed.

—ROY MACK.

FLÜCKIGER. (1950.) Rapport préalable sur le contrôle des vaccins et sérums contre le charbon bactéridien. **[Standardization of anthrax vaccine and serum. Preliminary report.]**—*Bull. Off. internat. Epiz.* **33.** 271-272. **11**

To ensure harmlessness of the vaccine, tests are made on rabbits ; g. pigs are not quite satisfactory.—ROY MACK.

ANON. (1949.) **The Australian Veterinary Association. Report of Committee on Tuberculosis.**—*Aust. vet. J.* **25.** 251-254. **12**

In Australia the average incidence of TB. in dairy cattle lies between 5 and 10% but may approach 40% in some areas. Incidence in beef cattle is lower but in a few herds may reach 13% or higher. Avian type TB. is relatively common in the southern states but its effect on bovine testing has not been assessed.

For the decade ending 1947-48 removal of reactors in the state of Victoria cost the dairy industry £360,720 (market value less residual value of hides, portions of carcasses, etc. For the same period in Victoria losses among pigs at slaughter amounted to £81,929.

The single intradermal test in the caudal fold using synthetic medium tuberculin read at 96 hours is the standard test in Australia. Results have been satisfactory, except for the failure to detect some generalized cases and an increase in the percentage of no-visible-lesion reactors in frequently retested herds.

Recommendations are (a) that further investigation be made with the "short thermal test." the Stormont test and improved tuberculins ; (b) the policy of establishing accredited herds and "closed" areas should be pursued wherever practicable ; (c) TB. in beef cattle should be controlled for the present by adequate

meat inspection and testing where practicable ; (d) that greater attention be given to the diagnosis and control of avian type TB. in poultry and that more data on its incidence in pigs be collected.—R. BAIN.

RAFFEL, S. (1947.) **Pathogenicity of the tubercle bacillus.**—*Proc. Soc. exp. Biol., N.Y.* **64.** 507-512. **13**

Complexes from tubercle bacilli of human type were extracted by treatment with trichloracetic acid, or diethylene glycol or urea or trypsin digestion, and were afterwards lyophilized.

Batches of g. pigs negative to the tuberculin test were injected subcutaneously on three occasions over an eight-week period, each animal receiving 1·5 mg. of a complex. Twelve weeks from the date of the first injection the animals were all tested with undiluted Old Tuberculin. All except the group given the diethylene glycol complex developed large necrotizing reactions averaging 29 mm. in diameter. None of the animals given the diethylene glycol complex developed any sensitivity to O.T. Of 37 g. pigs given the trichloracetic acid, the trypsin digest and the urea complexes, 31 had gross evidence of TB. on P.M. examination. It was subsequently found that small numbers of apparently intact bacteria were carried through the various processes in the preparation of the complexes and this is put forward as evidence that the g. pigs had contracted a surprising degree of infection as a result of exposure to a very small number of bacteria. It is suggested that the complexes acted as a 'virulence factor' enabling very small numbers of possibly damaged bacteria to establish themselves and produce a progressive infection.—D. LUKE.

FILIPOVITCH, D. & DJOURICHITCH, M. (1950.) Recherches de l'infection tuberculeuse du lait provenant des vaches à réaction tuberculinique positive. **[Absence of tubercle bacilli in the milk of cows which react to the tuberculin test.]**—*Bull. Off. internat. Epiz.* **33.** 17-20. **14**

In 130 samples of milk taken from cows with a positive tuberculin reaction, and belonging to herds of milch cows with healthy udders, no tubercle bacilli were found.—W. R. BETT.

I. FISHER, M. W. (1948.) **Streptomycin resistant tubercle bacilli. Their development during streptomycin therapy of pulmonary tuberculosis.**—*Amer. Rev. Tuberc.* **57.** 53-57. [Spanish summary.] **15**

II. FISHER, M. W. (1948.) **Sensitivity of tubercle bacilli to streptomycin. An *in vitro* study of some factors affecting results in various test media.**—*Ibid.* 58-62. [Spanish summary.] **16**

I & II. Sensitivity tests on organisms isolated weekly from 20 patients indicated that 75% remained sensitive over 120 days' treatment. The tests gave different results in the two media used (55 and 25% resistant) and Tween-80 (a surface active agent) was found to be the critical factor. F. recommended a test medium of a liquid synthetic base enriched with plasma or serum.—MALCOLM WOODBINE.

BARRY, V. C., BELTON, J. G., CONALTY, M. L. & TWOMEY, D. (1948.) **Anti-tubercular activity of oxidation products of substituted *o*-phenylene diamines.**—*Nature, Lond.* **162.** 622-623. **17**

Some seven pigments, the probable toxicity of which excludes therapeutic application, completely inhibited growth of *Mycobact. smegmatis* for six days and *Mycobact. tuberculosis* for 42 days at dilutions of 1 : 5,000 to 1 : 20 × 10^6.—MALCOLM WOODBINE.

1. DONOVICK, R., PANSY, F., STRYKER, G. & BERNSTEIN, J. (1950.) **The chemotherapy of experimental tuberculosis. I. The *in vitro* activity of thiosemicarbazides, thiosemicarbazones, and related compounds.**—*J. Bact.* **59.** 667-674. **18**

II. HAMRE, D., BERNSTEIN, J. & DONOVICK, R. (1950.) **The chemotherapy of experimental tuberculosis. II. Thiosemicarbazones and analogues in experimental tuberculosis in the mouse.**—*Ibid.* 675-680. [Authors' summaries copied *verbatim.*] **19**

I. The *in vitro* activities against the BCG strain of *Mycobacterium tuberculosis* of a number of thiosemicarbazones and related compounds have been determined, and from these activities certain general correlations as to structure and *in vitro* activity have been made. Thiosemicarbazide and its alkyl derivatives are active *in vitro*, but its acyl derivatives are, in general, inactive. Thiosemicarbazones formed from aliphatic carbonyl compounds are inactive. Condensation of aromatic aldehydes or cinnamic aldehydes with thiosemicarbazide will give active derivatives, but condensation with 3- and 4-substituted thiosemicarbazides will give inactive derivatives. No apparent correlation exists between the substituents in aromatic aldehydes and the activity of their corresponding thiosemicarbazones. Thiosemicarbazones derived from aromatic ketones are active *in vitro* although somewhat less active than the

thiosemicarbazone from the corresponding aldehyde. Thiosemicarbazones derived from heterocyclic aldehydes will also be active although somewhat less active than benzaldehyde thiosemicarbazone.

II. Of nearly 100 thiosemicarbazones and related compounds tested for antituberculous activity in the mouse only eight, all of these being *p*-substituted benzaldehyde thiosemicarbazones, showed significent reproducible activity. In order of activity expressed in terms of inverse molar intake required to effect a minimal response, the substituents rank as follows : ethyl sulfonyl = isopropyl > amino = acetamido = dimethylamino > nitro = sulfamyl = methoxy benzaldehyde, 3-thiosemicarbazone.

There is no quantitative relationship between *in vivo* and *in vitro* antituberculous activity, even among active compounds within the series of the thiosemicarbazones ; however, thus far only compounds active *in vitro* have been found active *in vivo*.

DESOUTTER. (1948.) La vaccination des bovidés par le B.C.G. **[Vaccination of cattle with BCG.]** — *C. R. Acad. Agric.* **34.** 598. **20**

Support by a farmer for BCG vaccination of cattle.—G. V. LAUGIER.

HEAF, F. (1950.) **Tuberculosis infection and the use of B.C.G.**—*J. R. sanit. Inst.* **70.** 138-145. Discussion pp. 143-145. **21**

BCG is harmless if properly prepared and administered. It should be given only to those not previously infected with the tubercle bacillus, and contact with infectious cases of TB. should be avoided after vaccination until the primary BCG lesion has developed. The intracutaneous route gives the best results. At present it is not wise to advocate mass vaccination of all non-reactors to tuberculin. Heat and ultra-violet rays accelerate the deterioration of the vaccine, but cold has little effect on the viability of the bacillus. However much BCG is used, general public health measures must be relied upon to prevent spread of infection.
—W. R. BETT.

BOLLIGER, A., FORBES, B. R. V. & KIRKLAND, W. B. (1950.) **Transmission of a recently isolated Mycobacterium to phalangers (*Trichosurus vulpecula*).**—*Aust. J. Sci.* **12.** 146-147. **22**

It was shown that a species of *Mycobacterium* isolated from an indolent ulcer of a human leg produced skin lesions when inoculated into the common phalanger or Australian opossum (*T. vulpecula*). The infection was transmissible through a series of phalangers. The lesions started as localized, oedematous, subcutaneous swellings followed by ulceration, which at times exposed and destroyed underlying muscles. Normal animals housed in the same room as affected animals also developed severe skin ulcers.—D. F. STEWART.

MATTHEWS, H. T. (1947.) **On Johne's disease.**—*Vet. Rec.* **59.** 397-399. Discussion pp. 400-401. **23**

M. gives the average age of clinical breakdown as 4·77 years in home-bred cattle. Factors which may be responsible for this breakdown are discussed. It is stated that there is no evidence that there is inherited susceptibility to this disease.—ROY MACK.

MARSH, H. (1947.) ***Corynebacterium ovis* associated with an arthritis in lambs.**—*Amer. J. vet. Res.* **8.** 294-298. **24**

A type of non-purulent arthritis and bursitis, caused by *Corynebact. ovis* infection, in a limited number of flocks in the North West States of the U.S.A. is described. Infection occurs apparently through the umbilicus, in lambing pens, as with *E. rhusiopathiae* arthritis, and lameness occurs some times later, up to six months of age. The condition differs from *E. rhusiopathiae* infection in that lambs recover clinically within a month if they are deprived of free exercise.—R. M. LOOSMORE.

MAAS, A. (1949.) Beitrag zur Schutzimpfung gegen den Rotlauf der Schweine. **[Vaccination against swine erysipelas.]**—*Berl. Münch. tierärztl. Wschr.* No. 6. pp. 65-69. **25**

Disadvantages of the method of Lorenz (vaccine-serum), namely insufficient protection and erysipelas following inoculation, are discussed. An alternative method, that of Traub, which consists of two injections of a concentrated dead vaccine, is stated to be harmless and affords complete protection for five or six months.—ROY MACK.

CHAPMAN, M. P. (1947.) **Listerellosis in a dog. A field case.**—*N. Amer. Vet.* **28.** 532, 534, 536 & 538. [Author's results slightly modified]. **26**

Erysipelothrix (*Listeria*) *monocytogenes* was isolated from the brain of a dog showing central nervous system disorders with impaired vision. The differential blood count showed 25 per cent monocytes, which is characteristic of the disease.

LYNCH, T. (1949.) **Pasteurellosis in calves in Ireland. Two cases of acute haemorrhagic septicaemia.**—*Irish Vet. J.* 3. 290-292. 27

Two cases of the acute septicaemic form of pasteurellosis in calves are recorded. The main P.M. findings were congestion of the lungs and the spleen, acute haemorrhagic enteritis and haemorrhages on the epicardium and endocardium. Gram-negative, bi-polar organisms were obtained in pure culture from the spleen and the liver. It is pointed out that pasteurella-like organisms are common in the upper respiratory passages of healthy cattle and invade the tissues only when the animal's resistance is lowered, but the exact aetiology of the disease is still open to question. In calves, infection may be by way of the umbilicus.—J. A. NICHOLSON.

FLORENT, A. & GODBILLE, M. (1950.) Les pasteurellas (coccobacilles) hémolytiques et leur importance dans la pathologie animale en Belgique. Leur sensibilité à la pénicilline. **[Infection in animals in Belgium caused by a haemolytic pasteurella and penicillin sensitivity.]**—*Ann. Med. vet.* 94. 337-361. 28

The authors re-describe the organism first recognized by Jones and Little and generally known as *Pasteurella haemolytica*. Serologically the strains which they isolated fell clearly into two types, one being far more common in the lungs of cattle than the other.

Certain strains of the commoner type, when inoculated intraperitoneally into g. pigs in large doses (2-3 ml. of a 24-hour broth culture) produced a fatal peritonitis and the fluid present in the peritoneal cavity was very pathogenic for the g. pig, 0·1 ml. causing death in less than 18 hours. The lesions produced resembled those provoked by a strain of *Past. septica*.

Similarly the exudate was found to be pathogenic for rabbits and mice, animals always resistant to cultures. Pigeons and fowls were not susceptible.

In sheep, intranasal infection produced a rhinitis and a very large dose of culture given intravenously caused the death of one sheep. No experiments were made with cultures in cattle. Lung suspension inoculated intranasally and given *per os* produced rhinitis and a very mild bronchitis, the latter lasting a few days only ; but cultures from the nose yielded *Past. haemolytica* for over six months.

In the authors' laboratory 35 strains of *Past. haemolytica* and 74 of *Past. septica* were isolated from the lungs of cattle in a year. In 29 out of the 35 cases the former organism was apparently present in pure culture and the authors stress the point that in no case in which the latter organism was isolated was the animal more than eight months old.

Past. haemolytica infection included cases of septicaemia of the new-born, septic pneumonia of calves of a few weeks to a few months and pneumonia of yearlings and adults. The lesions of the latter condition resembled those of bovine contagious pleuro-pneumonia.

The authors consider that the organism is of low pathogenicity and can produce disease in cattle only when the ground is prepared by factors which lower the animal's resistance such as bad hygiene, poor feeding, sudden chilling, transport, etc. They discuss at some length the possibility of a virus being a factor in the causation of these cases of broncho-pneumonia and conclude that the intervention of a virus has not been clearly proved.

The efficacy of sulphamethazine and penicillin was tested *in vitro* and in g. pigs. *Past. haemolytica* in g. pigs was found to be sensitive to penicillin, resistant to sulphamethazine. *P. septica*, on the other hand, was sensitive to sulphamethazine and resistant to penicillin.

—J. R. HUDSON.

ALBERTS, J. O. & GRAHAM, R. (1948.) **Fowl cholera in turkeys.**—*N. Amer. Vet.* 29. 24-26. 29

Four outbreaks of fowl cholera in turkeys in Illinois are rescribed. Mortality varied from 17% to 68%, the peak being observed between the fourth and eighth days of an outbreak. The course of the disease was acute, and death usually occurred within 24-48 hours.

Symptoms and pathological findings were typical of fowl cholera. The fluorescent type of *Pasteurella avicida* was encountered.

It is suggested that sudden changes in environment may cause decrease in resistance, *e.g.* a change of weather from warm and dry to cold and wet was coincident with an outbreak in two cases.

Sulphamerazine may be of value in reducing mortality during an outbreak.

—L. G. DONALD.

PERRIN, G., SAURAT, P. & VERGE, J. (1950.) Les nouveaux aspects de l'infection des équidés par *Salmonella abortus equi*. **[*Salmonella abortus-equi* infection in horses.]**—*Rec. Méd. vét.* 126. 321-328. 30

A description of several cases of generalized infection with *S. abortus-equi* in horses, which supports the view, expressed from many sides in the recent literature, that horses of various ages and of both sexes are subject to infection.

—A. MAYR-HARTING.

WRIGHT, M. L. (1948.) **The suitability of *Salmonella pullorum* strains used in the agglutination test for pullorum disease control.**—*J. Amer. vet. med. Ass.* **112.** 241-244. 31

Because of the occurrence of *S. pullorum* variants which are not detected by the standard tube agglutination test, double testing is now compulsory in Canada, the second test comprising the use of an antigen prepared from the variant strain. A composite antigen prepared by mixing standard and variant strains is impractical. A strain incorporating both the standard XII_3 factor and the variant XII_2 factor is thus required to make a single test possible, and W. has isolated several substrains of such an organism. It is, as yet, doubtful, however, whether such strains possess the other characteristics of a desirable antigen.

Two further characters which render certain strains unsuitable for use as an antigen are mentioned. Rough variants have been encountered from time to time, and it is suggested that any suspected culture should be renewed immediately.

Finally, it has been demonstrated that many of the stock antigen cultures of *S. pullorum* are so insenitive to homologous agglutinins that their inclusion in an antigen is undesirable. An antigen prepared from a single strain is probably much more sensitive.

—L. G. DONALD.

MCCULLOUGH, N. B., EISELE, C. W. & PAVELCHEK, E. (1949.) **Isolation of *Brucella abortus* from hogs.**—*Publ. Hlth. Rep., Wash.* **64.** 537-538. 32

Br. abortus was isolated from the submaxillary lymph nodes of eight pigs slaughtered for food.—R. MARSHALL.

HUTCHINGS, L. M. (1950.) **Swine brucellosis.** Washington : American Association for the Advancement of Science. Brucellosis. A Symposium. pp. 188-197. 33

In the U.S.A. brucellosis in pigs plays an important role in the infection cycle between pigs, cattle and human beings, and is therefore of considerable importance, not only to the animal industry but also to the epidemiology of brucellosis in man. In pigs, the bacteraemia which develops upon exposure to *Br. suis* is followed by localization in various organs and tissues. Variation in symptoms—*e.g.* abortion, orchitis, lameness, formation of abscesses—is believed to be dependent upon the sites of localization. There has been considerable controversy concerning the use of the serum agglutination test for diagnosis of *Br. suis* infection in pigs. From a study of the agglutination titres of 212 animals experimentally exposed to *Br. suis*, H. concluded that the agglutination reaction is the most adequate herd diagnostic procedure but may not be sufficiently reliable when applied to individual animals. He believes that slaughter of infected pigs is a sounder control measure than the use of vaccines or chemotherapeutic agents.

—L. M. JONES.

HILLAERT, E. L., HUTCHINGS, L. M. & ANDREWS, F. N. (1950.) **Brucellosis in male guinea pigs.**—*Amer. J. vet. Res.* **11.** 84-88. 34

Following exposure to *Br. suis*, 60% of the g. pigs eliminated this organism in the semen, but infection was not transmitted from infected males to non-infected females. *Br. suis* survived for 49 days in g. pig serum kept at 4°C.

—ROY MACK.

DALRYMPLE-CHAMPNEYS, W. (1950.) **Undulant fever. A neglected problem.**—*Lancet.* **258.** 429-435; & 478-485. 35

A detailed account of *Brucella abortus* infection in man and cattle, being the text of the Milroy lectures for 1950. Neglect is due to the supposed rarity of the disease in man and difficulties of diagnosis. The many and varied symptoms of human infection are given. Pasteurization of milk is urged as a prophylactic measure. Treatment of the disease with antibiotics has given encouraging results.

—ROY MACK.

DALRYMPLE-CHAMPNEYS, W. (1948.) **A study of the epidemiological aspects of undulant fever in this country. Based upon nearly 900 cases.**—*Publ. Hlth., Lond.* Sept. pp. 1-5. 36

The author gives a general survey of undulant fever in man as it occurs in the United Kingdom. He is convinced that hundreds of cases occur every year that are diagnosed as influenza, malaria, and a wide variety of conditions. Only the "*abortus*" variety of the organism has been identified in human cases in the United Kingdom. He made a plea for closer liaison between the medical and veterinary professions. He considered that this disease in human beings is neglected because of difficulties in clinical diagnosis, the fact that it is not notifiable, the underestimation of its seriousness because of its low mortality, and the fact that outbreaks are uncommon. In his opinion undulant fever should be suspected in most cases in which diagnosis is obscure, steps being taken for the use of the necessary means

of diagnosis, blood culture, and the use of the agglutination test. He advocated pasteurization of milk.—D. S. RABAGLIATI.

THOMSON, W. M. (1950.) **A study of blood tests for brucellosis grouped according to the age of the animal.**—*J. Amer. vet. med. Ass.* **116.** 117-119. **37**

A statisical analysis of agglutination test results from 509 herds. Of cows vaccinated as calves, and exposed to brucellosis, 8·5% reacted at the age of 2-3 years. Of these, 3·5% reacted as a result of vaccination, and 5% became reactors because of natural infection.

—ROY MACK.

WILLEMS, R. (1950.) Rapport sur la standardisation de l'antigène pour le diagnostic de la brucellose bovine par la méthode d'agglutination lente. **[Standardization of brucella antigens used in the agglutination test.]**—*Bull. Off. internat. Epiz.* **33.** 279-285. **38**

Details are given of the technique used by W., who employed the Weybridge strain.

—ROY MACK.

POMALES LEBRÓN, A. (1949.) **A heat-stable, water-soluble Brucella allergen. Preliminary report.**—*Puerto Rico J. publ. Hlth.* **24.** 337-342. [Spanish version 343-348.]—[Abst. in *Bull. Hyg., Lond.* **24.** 865. (1949), copied *verbatim.* Signed : R. LOVELL.] **39**

A saline suspension of *Br. abortus* was dried *in vacuo* and treated with formamide and heat at 150 to 155°C. for 15 minutes ; after cooling, two and a half volumes of acid alcohol (95 cc. of 95 per cent. alcohol plus 5 cc. of approximately 2 normal HCl) were added and the precipitate was discarded by centrifugation ; an equal volume of acetone was then added to the supernatant and this precipitate, which formed immediately, was discarded after further centrifugation ; the subsequent supernatant was placed in the cold overnight and the precipitate which now formed was collected by centrifugation and then dissolved in saline or water to which a few drops of 10 per cent. sodium hydroxide were added. The fluid was then dialysed through "Cellophane" until the dialysate was free of chloride ions and the product was sterilized by filtration and then lyophilized. The dry finished product was readily soluble in water, and 5 mcg, [*sic.*] dissolved in 0·1 cc. of saline, when injected intradermally into sensitive people, produced a reaction in one or two hours, with the classical appearance in 18 to 25 hours.

HOYER, B. H. (1950.) **Some aspects of the physiology of Brucella organisms.** Washington : American Association for the Advancement of Science. "Brucellosis. A Symposium." pp. 9-25. **40**

A review of the available knowledge of the physiological activities of the brucella organisms and a discussion of applications to current problems in brucellosis. Environmental conditions such as pH, osmotic pressure and aeration have a definite effect on the initiation of growth and the production of maximum yields of brucella. Growth of brucella organisms in chemically defined media has provided opportunity for detailed and controlled study of nutrition and metabolic activities. The activities of resting cell suspensions on various media have been investigated utilizing the Thunberg methylene blue reduction test and the Warburg respiration technique. These metabolic studies have been directed towards elucidation of CO_2 requirement of *Br. abortus*, aid in isolation of organisms from patients, differentiation of *Brucella* species and the therapy of brucellosis.—L. M. JONES.

HOLM, L. W. & MCNUTT, S. H. (1949.) **Brucellosis therapy : studies on the effect of streptomycin and sulfadiazine in experimental brucellosis in guinea pigs.**—*Amer. J. vet. Res.* **10.** 336-340. **41**

Eight hundred and ten male g. pigs in groups of ten were infected by intraperitoneal injection of one million *Brucella abortus* organisms. Treatment which consisted of either 5,000 units of streptomycin, 120 mg. of sodium sulphadiazine, 1 g. of sodium *p*-aminobenzoate or various combinations of the three drugs administered in one, two or five daily doses was commenced either one week prior to infection, at the time of infection or two, five or ten days after infection, and continued for 21 days. Infected untreated controls were maintained. At the end of treatment agglutination titres were determined and 20 days later P.M. and cultural examinations were carried out.

Results are given in tabular form and it is indicated that sodium *p*-aminobenzoate alone gave no significant protection. Streptomycin alone was of little value and combined with *p*-aminobenzoate was no better. The best results were obtained with a combination of streptomycin and sulphadiazine administered at the time of infection. The combination was almost as effective when commenced two, five or ten days after infection and one daily dose was as good as two or five doses. No toxic effects of treatment were observed.—E. J. H. FORD.

ZAMURI, I. R. (1949.) **The importance of separate parturition pens in the control of brucellosis.**]—*Veterinariya, Moscow.* **26.** No. 7 pp. 5-6. **42**

A reference to the need for segregation of pregnant animals of infected herds in separate buildings 10-15 days before parturition in order to reduce the spread of brucellosis, mention being made of other control measures in housed cattle.—F.A.A.

TRAUM, J. (1950.) **The control of brucellosis in animals by the use of vaccine.** Washington : American Association for the Advancement of Science. Brucellosis : A Symposium. pp. 225-235. **43**

T. expressed the belief that strain 19 vaccination is a valuable aid in the control and eventual eradication of brucellosis in cattle. It does not in all cases provide immunity during exposure. Revaccination and adult vaccination were suggested as a means of increasing the duration and degree of resistance.

—L. M. JONES.

KILHAM, B. J., REED, G. W. & CLARK, C. F. (1950.) **Field experiences with Brucella M vaccine.**—*M[ich.] S[tate] C[oll.] Vet.* **10.** 69-71. **44**

The authors have attempted to determine the brucellosis status of average farm herds before and after vaccination with brucella M vaccine. Only agglutination test data are reported. Clinical signs of infection as indicated by abortion are not reported for the herds during the period of observation. Most of the herds selected for M vaccination were in counties where area brucellosis testing, calfhood vaccination with strain 19 and frequent disposal of reactors was in operation. The same conditions prevailed in the control group in which M vaccination was not performed. The summary of the results is as follows : Of 2,402 cattle in the M vaccinated group, 28·38% were reactors and suspects at the time of the prevaccination test, whereas only 8·09% were reactors and suspects at the postvaccination tests given after an average interval of nine months. In the control group of 2,927 non-vaccinated cattle 23·60% were reactors and suspects upon the initial test and 17·46% were reactors and suspects upon retesting after an average interval of seven months. The authors attribute the greater reduction in reactors and suspects in the first group to the brucella M vaccination.

—L. M. JONES.

HUNGATE, R. E. (1950.) **The anaerobic mesophilic cellulolytic bacteria.**—*Bact. Rev.* **14.** 1-49. **45**

H. described in detail the technique he used with success for the isolation and study of anaerobic cellulolytic bacteria. The medium used is a rumen fluid cellulose agar which is prepared with special precautions to maintain anaerobic conditions : manipulations involved in isolation of colonies, preparation of subcultures and other studies of the organisms are all carried out under conditions which are sufficiently anaerobic to keep the oxidation-reduction indicator (resazurin) colourless. Pure cultures are obtained from single colonies growing in a thin film of agar near the top of culture tubes and picked out under a dissecting microscope. Strict criteria of culture purity are adopted : the organisms are subcultured into sugar media twice in succession and then returned to cellulose agar to confirm their cellulolytic activity. Complete and continuous anaerobic conditions, direct dilution into solid cellulose media and the use of finely divided cellulose seem to be the essential factors in successful isolation of pure cultures.

He also described the characteristics of new types of non-sporing cellulolytic rods isolated from the bovine rumen and from sewage sludge and soil. They are of importance in the rumen and in sludge but their significance in soil is not established. They are Gram negative and can be divided on the basis of morphological and fermentation reactions into at least four distinct types. Anaerobic cellulolytic cocci occur in large numbers in the rumen and seem to be the most important cellulolytic bacteria in the ruminant stomach. Three strains of actively cellulolytic colourless cocci are described and also two less active strains of yellow cocci.

A number of strains of spore-forming anaerobes were obtained and their characteristics are described. There is also a summary of the literature dealing with mesophilic spore-forming cellulose anaerobes isolated from various sources.

A feature of cellulolytic anaerobes is the low concentration of substrate which can be fermented in culture, *e.g.* growth may be inhibited when 0·1-0·3 g. of cellulose per 100 ml. medium has been decomposed. Analyses of the rumen fluid used for cultivation revealed the presence of volatile and non-volatile acids in amounts comparable to those recorded by other workers. Pure cultures of the rumen cellulolytic bacteria produced fatty acids and gases in varying amounts, the significance of which is discussed in relation to

rumen fermentation. The absence of hydrogen from the rumen and the presence of methane may be caused by the conversion of the former into the latter : this view is supported by unpublished work carried out in H.'s laboratory in which the rapid utilization of hydrogen with production of methane by rumen contents was observed.

The variety of products and the low activity of the organisms gives little hope of the industrial application of cellulose fermentation with pure cultures of cellulose bacteria.

—E. G. WHITE.

THIERY, J. P. (1950.) Rapport sur le contrôle de l'innocuité et de l'efficacité des sérums et des vaccins contre le charbon symptomatique. **[Tests for safety and activity of blackleg serums and vaccines.]**—*Bull. Off. internat. Epiz.* **33.** 314-316. **46**

Living attenuated and formolized vaccines are used. The former have to be proved free only from aerobic contaminants ; the latter are tested anaerobically as well, and should not show growth within a fortnight ; if incubated longer, an occasional spore may be capable of germination, but this does not make it necessary to discard the vaccine. When vaccines are injected into a g. pig, not more than a slight oedema, disappearing within 36 hours, should be noted. The efficacy of the vaccine can be tested only in cattle, but in view of the extreme sensitivity of these animals to *Cl. chauvoei* the test animals should be at least 12-18 months old. There is no reliable control of the efficacy of antiserum.—A. MAYR-HARTING.

JAMIESON S., THOMPSON, J. J. & BROTHERSTON, J. G. (1948.) **Studies in black disease. 1. The occurrence of the disease in sheep in the North of Scotland.**—*Vet. Rec.* **60.** 11-14. **47**

The authors report the identification of black disease in ewes in Great Britain, for the first time. The epidemiology of the condition is the same as that obtaining in Australia, the infective agent being *Clostridium oedematiens*, carried to the liver by the immature forms of *Fasciola hepatica*, where it produces necrotic lesions. These occur in all cases, either on the surface or in the substance of the liver, being sharply demarcated and surrounded by a zone of congestion. The lesions vary in size from minute to 4 cm. in diameter, and may be up to 8 cm. in length. It is emphasised that a careful search may be necessary to find the lesions. Immature flukes are always found in the liver substance. The condition appears seasonally, from Sept. until the end of Dec., and may be distinguished from braxy, which occurs at the same season, in that it affects chiefly adult sheep, that an outbreak ceases abruptly after a frost (braxy usually occurring after a frost), and in the site of the lesions.—R. M. LOOSMORE.

RADAN, M. & RAUTENSTEIN-ARASI, N. (1950.) **Anaerobic subcutaneous emphysema of poultry. [Correspondence.]**—*Nature, Lond.* **166.** 422. **48**

The authors report the occurrence of cases of subcutaneous emphysema in poultry in Southern Israel. The condition referred to could not be corrected by repeated puncturing of the skin. Changes in the musculature suggestive of anaerobic infection were found.

Only birds 4-16 weeks old were affected and bacteriological examination revealed a mixed infection of clostridia (*Cl. welchii* and less commonly *Cl. tertium*), and cocci. Infection is thought to have taken place through skin wounds.—D. LUKE.

DOLMAN, C. E., CHANG, H., KERR, D. E. & SHEARER, A. R. (1950.) **Fish-borne and type E botulism : two cases due to home-pickled herring.**—*Canad. J. publ. Hlth.* **41.** 215-229. [Authors' summary copied *verbatim.*] **49**

One man died, and another recovered, after consumption of home-pickled herring caught near Vancouver, B.C. From the stomach and jejunal contents of the fatal case, and from a fragment of discarded herring bone, *Clostridium botulinum* type E was isolated.

The total number of outbreaks of botulism recorded in Canada now stands at 6. In all, 38 persons have been affected, 22 fatally. The causal micro-organism was identified in 3 of these outbreaks, all occurring in British Columbia within the 5-year period 1944-49, and involving 7 persons, of whom 6 died. Two of the 3 outbreaks recorded in this Province have been ascribed to type E organisms, with fish implicated as the vehicle.

The "Nanaimo salmon" and "Vancouver herring" strains are alike in many respects, but differ in certain particulars. For example, whereas toxin from the Nanaimo strain does not affect chickens, an equivalent dose of "VH" toxin (as judged by mouse M.L.D.'s) caused paralysis on intramuscular injection into a pullet.

Only 5 type E outbreaks of botulism have been recorded to date, all of them in North America. Among the 14 persons affected, there were 7 deaths. The prototype E strains were originally isolated from fish in the U.S.S.R.,

but were identified in the United States as representatives of a new type.

The high predilection for fish shown by type E strains is the more conspicuous because in the United States botulism has seldom been traced to fish. In Russia, and to a lesser extent in Germany, fish-borne botulism seems to have been relatively common ; but little bacteriological information is available respecting types involved there.

Consideration has been given to the routes and mechanisms whereby fish may be polluted with *Cl. botulinum* and hence become botulinogenic to the human consumer. In the particular episode described, toxin was almost certainly elaborated in the flesh of the herring prior to the pickling process. The type E organisms may have reached the muscle tissues from damaged and contaminated integuments, or by leakage from the gut.

Brief reference is made to many potentially botulinogenic hazards inherent in current methods of handling fish. Pickled herring would seem to be especially vulnerable from this standpoint.

COPPINI, R. (1949.) Ricerche sulla pedaina degli ovini. II. Valutazione dei danni determinati dalla malattia agli allevamenti ovini italiani. **[Foot rot in sheep. II. Estimation of losses caused in Italy.]**—*Zootec. Vet., Milano.* **4.** 165-169. **50**

From a study of experimentally controlled data, C. estimated the value and extent of the losses caused by foot rot in Italian sheep. These losses amount yearly to 8,640 quintals of meat, 19,169 of cheese, 7,893 of butter, 1,641 of wool, costing approximately 1,700 million liras gross, as reckoned at the current prices.—B. BALDELLI.

BARNER, R. D. (1949.) **Histoplasmosis.**—*Fed. Vet.* **6.** No. 5. p. 2. **51**

B. discussed the occurrence of histoplasmosis in cattle in the U.S.A., digestive upset and general unthriftiness being among the signs noted at the onset of the disease, and enlarged lymph nodes, liver and spleen, the presence of ascites and icterus being observed P.M. In Eastern Kansas, 4·6% of the cattle were reactors to histoplasmin, the geographical distribution being generally similar to that of human reactors. Reference is also made to infection of dogs and rodents in the U.S.A.—E. EDEN.

CORDY, D. R. (1949.) **Histoplasmosis in a dog.**—*Cornell Vet.* **39.** 339-343. **52**

C. describes in detail the clinical symptoms and P.M. findings in a case of canine histoplasmosis. The course of the disease was prolonged with gradual emaciation, icterus, vomiting, anorexia, ascites and diarrhoea. P.M. examination revealed enlargement and extensive necrosis of the liver and spleen and abdominal lymphadenopathy. Encapsulated *Histoplasma*-like bodies, 3μ in diameter, were present in the macrophages which served to confirm the diagnosis in the absence of cultural studies.

C. gave a brief summary of the previous literature on canine histoplasmosis in America.
—FERGUS S. MCCULLOUGH.

ROBERTS, T. E. (1947.) **The varieties of fungi causing ringworm of the scalp.**—*Med. Offr.* **77.** 65. [Author's summary slightly modified.] **53**

Ringworm of the scalp due to *M. felineum* or *M. lanosum* as compared with that due to *M. audouini* is :— almost the only variety now found in Portsmouth ; more prevalent in recent years than formerly ; contracted from cats, dogs and children ; probably more contagious. Clinically it appears to :— develop more rapidly ; run a more acute course of shorter duration ; involve the skin of face, neck, etc., frequently ; affect the skin of the scalp on occasion without the hair being involved ; produce a greater local reaction—silvery scales, reddening of the scalp ; cause multiple lesions more often and earlier ; respond more readily to treatment by ointments ; need X-Ray treatment (epilation) only in cases where infection of the scalp is extensive.

GORET, P., LUCAM, F., JOUBERT, L. & RIDET, R. (1949.) Un cas d'actinomycose généralisée chez le chien. **[Actinomycosis in a dog.]**—*Bull. Soc. Sci. vét. Lyon.* **51.** 66-70. **54**

The authors state that the case they describe of generalized actinomycosis in a dog is the first in that host. There were no granules in the pus. The authors speculate as to the nature of the causal organism. Their preliminary studies have indicated that it has the characters of both *Nocardia* and *Actinomyces*.
—W. R. BETT.

BUCY, C. B. (1948.) **Actinobacillosis in a mare.**—*Texas vet. Bull.* **10.** No. 10. p. 3. **55**

A note on tongue disease in a mare ; it was diagnosed clinically as actinomycosis, but no steps were taken to confirm this.
—ROY MACK.

GRAYSON, A. R. (1950.) **The control of contagious pleuro-pneumonia in cattle in Victoria.**—*Aust. vet. J.* **26.** 163-166. **56**

A brief history is given of the introduction of bovine contagious pleuro-pneumonia into

Australia in 1858 and its subsequent spread through Victoria. Until 1925, when the Cattle Compensation Act (Vic.) came into being, control measures were ineffective. Present control measures are detailed and comprise, in brief, restrictions upon cattle introduced into Victoria and control over their subsequent movements. Where outbreaks occur, quarantine is applied and active cases are slaughtered. The complement-fixation test is applied to the remainder of the herd which is simultaneously vaccinated. A close surveillance is maintained over all cattle in infected or in-contact properties. The sera of all cattle are resubmitted to the complement-fixation test and any reactors are slaughtered. Contact properties are released from quarantine 12 weeks after the last case or positive reactor is removed from the adjoining affected property. Quarantine is maintained on properties in which clinical cases occur until the cattle are slaughtered under supervision. Attention is drawn to the severity of the reactions which sometimes follow vaccination and to the inadvisability of retesting the sera for at least five months afterwards. The history of several outbreaks is detailed illustrating the difficulties encountered in controlling the disease.—D. F. STEWART.

WEBSTER, W. (1950.) **Control of contagious pleuro-pneumonia in Australia.**—*Aust. vet. J.* **26.** 167-171. **57**

In Northern Australia where land is lightly stocked and properties range in size up to 5,000 or 10,000 square miles, cattle are mustered only once or twice a year and control of bovine contagious pleuro-pneumonia cannot be exercised by the accepted methods of quarantine, slaughter, complement-fixation test and inoculation. The disease is not widespread in Queensland, but is enzootic in certain areas, particularly the isolated parts of the State where cattle are run on large properties. It is usual for cattle to be bred in the Northern Territory or the Gulf Country of Queensland and to be driven south or east as stores. Following summer rains there is a huge trek of more than one million cattle annually travelling from north to south or west to east and this movement represents a constant threat to the south. An active vaccination campaign has now been commenced and 250-300 thousand doses are distributed each year. Legislation has been promulgated also to prohibit the movement of cattle from enzootic areas unless they have been vaccinated. Cattle entering Queensland from the Northern Territory north of the 20th paralled are also vaccinated. Should outbreaks occur on smaller properties in closely settled areas the accepted methods of control are applied. A discussion held on the paper is also reported.—D. F. STEWART.

See also absts. **165** (experimental brucellosis in dogs): **195** (streptomycin); **209** (action of formaldehyde on bacterial cells); **227** (*Salmonella typhi-murium*); **229** (bacteria in dried whale meat); **230** (*Staphylococcus aureus*); **231** (scarlet fever); **240** (bacteria in bull semen); **272-274** (reports, Australia) **275-276** (reports, S. Africa); **277** (book, TB.; **278** (book, brucellosis); **279** (report on leptospirosis in Palestine); **288** (book, bacteriology).

DISEASES CAUSED BY PROTOZOAN PARASITES

TRINCÃO, C. (1948.) **A new reaction for the diagnosis of kala-azar : a preliminary report.** —*Amer. J. trop. Med.* **28.** 287-288. **58**

When serum from kala-azar patients was mixed with 0·3 N hydrochloric acid in the proportion of 2 : 1, coagulation of the mixture occurred. This was not the case with serum obtained from patients with other diseases. The use of this test is advocated as it is easier to carry out than Napier's formeldehyde test. —E. EDEN.

BARTLETT, D. E., TEETER, K. G. & UNDERWOOD, P. C. (1947.) **Artificial insemination as a means of transmission of bovine venereal trichomoniasis.**—*J. Amer. vet. med. Ass.* **111.** 114-115. **59**

Undiluted semen, collected by means of an artificial vagina from a bull infected with *Tr. foetus*, was used to inseminate nine females. Six became infected from seven inseminations. It was concluded that transmission of trichomoniasis by artificial insemination occurs readily and regularly.—GEORGE M. URQUHART.

LAMONT, H. G. (1949.) **Technical aspects of trichomoniasis (Laboratory diagnosis).**—*Proc. XIIth Internat. Dairy Congr., Stockholm.* Sect. I & VI. 548-554. [In English. French summary.] **60**

Direct examination of vaginal mucus or of uterine washings for *Trichomonas foetus* is difficult ; a method is therefore described for preparing cultures with the use of penicillin to inhibit the growth of other organisms. Details of a test for detecting antibodies in the blood and mucus are also given.—E. EDEN.

THOROLD, P. W. (1949.) **A note on the cultivation and diagnosis of *Trichomonas foetus*.**—*J. S. Afr. vet. med. Ass.* **20.** 189 - 192. **61**

Stock cultures are cultivated in an egg-serum thioglycollate medium on an inspissated serum slope. Subcultures are made every seven

days. Bacterial contaminants may be controlled by the addition of penicillin or streptomycin to the medium, or bacteria-free cultures may be obtained by the V-tube method using a semi-solid medium.

Diagnosis depends on the detection of a motile trichomonad, and methods of collecting vaginal and preputial samples are described.

—GEORGE M. URQUHART.

HESS, E. (1949.) Behandlung trichomonadeninfizierter Zuchtstiere. [**Treatment of bulls infected with** *Trichomonas*.]—*Schweiz. Arch. Tierheilk.* **91.** 481-491. [French summary.] **62**

Of 4,106 cases of abortion which occurred during the last ten years, 20·4% were caused by *Tr. foetus*. The flagellates are facultative anaerobes and in liquid media, despite their motility, clump at the bottom of the culture tube. But they rise in tall tubes of serum broth and growth is more abundant as the surface of contact with the air is reduced. In the absence of oxygen the influence of the height of the column of serum broth and that of the extent of the free surface fall at the same time. In closed ampoules containing nitrogen, even if the layer of serum broth is very thin, the growth and duration of life are optimal.

Hydrogen peroxide by production of nascent oxygen suspends all growth at a dilution of 1 : 50,000 and at 1 : 10,000 destroys a well developed culture.

Treatment of infected bulls is based on the sensitivity of the parasites to oxygen. The organisms must be attacked at their predilection site, namely, the folds on the gland surface and of the prepuce. Using a spray apparatus operated by a hand pump, a mixture of 3% hydrogen peroxide and 1 : 1,000 wetting agent at a temperature of 40°-42°C. and a pressuse of 8-9 atmospheres is directed on to the gland surface and the preputial folds. The sheath is stretched and disinfected at the same time.—M. L. CLARKE.

BOLIN, F. M., GOLDSBY, A. I., & EVELETH, D. F. (1947.) **Di-isobutyl phenoxy ethoxy ethyl di-methyl benzyl ammonium chloride as an aid in the prevention of protozoan diseases of poultry.**—*Vet. Med.* **42.** 306-310. **63**

The quaternary ammonium compound is used as a 1 : 5,000 dilution in the drinking water, but is only an adjunct to the detailed general sanitation, nutrition and management practices for controlling gastro-intestinal protozoa in fowls, turkeys and pigeons.

—MALCOLM WOODBINE.

JUSSIANT, A., & CONZEMIUS. (1950.) Traitement de la coccidiose aviaire (dindonneaux et poussins) par injections intrapéritonéales. [**Treatment of coccidiosis in fowls and turkeys by intraperitoneal injection of carbon tetrachloride.**]—*Bull. agri. Congo belge.* **41.** 137-140. **64**

Intraperitoneal injection of carbon tetrachloride into turkeys is stated to have caused a rapid rise in the output of coccidian oocysts. This rise was followed by a fall in numbers. Similar observations were made with fowls. From this it is deduced that the drug is a specific against avian coccidiosis.

—S. BRIAN KENDALL.

MOORE, E. N. (1948.) **Sulfonamides in the control of histomoniasis and coccidiosis of turkeys.**—*Proc. 20th Ann. Meet. N.E. Conf. Lab. Wkrs. Pullorum Dis. Contr.*, June 8th, 9th & 10th. pp. 70-72. [Mimeographed.] **65**

Turkeys with histomoniasis were treated with phenothiazine 1% in the mash, sulphamerazine 0·5% in the mash or sulphaquinoxaline 1 oz. in 200 lb. mash. Sulphaquinoxaline was the most effective in reducing mortality.

Treatment of coccidiosis with these two sulpha drugs at similar dose rates also reduced the mortality from about 15% to 6%.

—E. EDEN.

MCKAY, F. & MOREHOUSE, N. F. (1948.) **Studies on experimental blackhead infection in turkeys.**—*J. Parasit.* **34.** 137-141. **66**

A successful method of infecting young turkeys, for the purpose of trials with chemotherapeutic agents, is the feeding of mature *Heterakis* eggs, obtained from adult fowls. Disadvantages of other methods of artificial infection, and also the unreliability of field trials depending on natural infection, are discussed.—ROY MACK.

CHERNIN, E. & SADUN, E. H. (1949.) *Leucocytozoon simondi* **infections in domestic ducks in Northern Michigan with a note on** *Haemoproteus*.—*Poult. Sci.* **28.** 890-893. **67**

An area of Michigan was surveyed to determine the incidence of *L. simondi* infections in domestic ducks. In late June 43 birds examined were found to be negative, but by early August 37 of 38 birds were positive. Wild duck or birds other than wild duck are considered to be possible reservoir hosts, in view of the few domestic ducks in the area and the fact that very few ducks are kept over the

winter. *Haemoproteus* infections were discovered in two domestic ducks.

—GEORGE M. URQUHART.

PAVLOV. (1948-49.) Recherches sur les piroplasmidés et les maladies qu'ils provoquent en Bulgarie. **[Piroplasmoses in Bulgaria.]** —Sofia : Annuaire de l'Académie rurale Georges-Dimitrov. Abst. in *Bull. Off. internat. Epiz.* **31.** 500. (1949.) **68**

The most important piroplasms in cattle are *Babesia argentina* and *B. bovis*, the symptoms depending more on the virulence of the strain than on the number of parasites in the blood. Of the two, *B. argentina* is the more virulent. Theileriasis resembles East Coast fever as regards symptoms, but the organism is identical with *T. annulata*.

—JAS. G. O'SULLIVAN.

PIEKARSKI, G. (1949.) Zur Epidemiologie der Toxoplasmose. **[Epidemiology of *Toxoplasma* infection.]**—*Z. Parasitenk.* **14.** 388-389. **69**

Mice were infected with *Toxoplasma gondii* by intraperitoneal injection and three days later blood from the tail veins was found to be infective for other susceptible mice when injected intraperitoneally. Similarly, rabbits were infected by the intracutaneous route and parasites were later demonstrated in the peripheral blood from the ear vein. In both cases numerous *Toxoplasma* bodies were demonstrated in the peritoneal exudate of the test mice.

Fleas (*Leptopsylla segnis*) and bugs (*Cimex lectularius* and *Rhodnius* sp.) were shown to contain the parasites after feeding upon infected mice and rabbits. The insects were ground up and injected intraperitoneally into mice which developed typical infections. The bugs were shown to be infective five hours after an infected blood-meal.

Attention is drawn to the possible role of ectoparasites as vectors of *Toxoplasma* infection and the possibility of fresh animal hosts becoming infected by the ingestion of the insects.

—L. P. JOYNER.

See also absts. **238** (artificial insemination and control of dourine and trichomoniasis); **288** (book, parasitology).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

ANON. (1950.) **Rhode Island site selected for foot-and-mouth laboratory.**—*Fed. Vet.* **7.** No. 3. p. 2. **70**

The U.S. Department of Agriculture has taken over Prudence Island, a part of Rhode Island, for the erection of a Foot and Mouth disease laboratory. This is one of the few island sites conforming to the ten basic requirements, especially since the regulations forbid the introduction of live virus to the mainland. The example of the Mexican outbreak and the constant danger of introduction of disease has emphasized the need for such a laboratory. Preliminary plans call for strict isolation and virus studies will be carried out in walled compounds.—G. V. LAUGIER.

TORRES, G. S. (1950.) El problema sanitario de la rabia humana en Mexico. **[Health problem of human rabies in Mexico.]**—*Bol. Ofic. sanit. panamericana.* **29.** 267-274. [English and Spanish summaries. English summary copied *verbatim.*] **71**

The present survey was made in the *Centro Antirrábico del Distrito Federal*, and comprises a period of 2 years from February 1, 1947, to January 31, 1949. Although the normal care of patients includes only the Federal District, and nearby States, the author has examined patients coming from distant points of the Republic. During the first year, 5,649 persons were registered for treatment, and during the second year, 6,594. Of this total, 10,574 (86·37%) were bitten by dogs, and the remaining 13·63% by other species of animals : (rodents, 1,000 cases (8·17%) ; and cats, 471 (3·85%). The sites of the lesions were as follows : head and adjacent regions 1,626 (13·28%) ; trunk, 199 (1·65%) ; upper extremities, 4,726 (38·60%) ; lower extremities ; 4,622 (37·75%) ; unspecified (contacts), 1,070 (8·74%). In 86·98% of the cases, vaccination started between the first and the seventh day after contact. The group which required 32,000 vaccine units represents only 4·32%. The second group who received 40,000 units represents 1·23%. Of all the cases where the therapy was completed, (33·15%), 856 (21·09%) were bitten by confirmed rabid animals, and 1,572 (38·74%) by suspects. 82 in the group where treatment was not completed were bitten by confirmed rabid animals, making a total of 2,510 confirmed cases. Another group of 1,630 (40·17%) suspected animals bit individuals who subsequently received full vaccine treatment, while 56 (40·58%) bit individuals who had not finished the treatment. Of 5,105 orders given for the capture of these animals, 4,617 were executed. The total of confirmed rabid animal cases which came to the Centro Antirrábico was 929 (20%), which is undoubt-

edly a high figure. Nineteen cases of human rabies were observed, 4 of which had received complete vaccination that had been initiated one to 4 days after exposure. All these were produced by dogs ; the site of the lesions may be as follows : 36·8% upper extremities ; 26·3% lower extremities, 21·1% in the face, and 15·8% unidentified.

FIGUEROA, J. (1950.) Problemas del control de la rabia en México. **[Rabies control in Mexico.]**—*Bol. Ofic. sanit. panamericana.* **29.** 275-280. [English summary copied *verbatim.*] **72**

It is recognized that rabies is widespread throughout the Republic of Mexico, that animals of the canine species are the principal spreaders of the infection, and that there are large numbers of uncontrolled dogs whose owners are not held responsible for protecting them against rabies. Further, there is evidence that epizootics of rabies occur in wild animals, and that the wildlife population serves as a widespread reservoir of infection. The author recommends the adoption of uniform regulations concerning owner responsibility and compulsory vaccination of dogs.

BLOOD, B. D. (1950.) Tratamiento antirrábico en el hombre. **[Anti-rabies treatment in man.]**—*Bol. Ofic. sanit. panamericana.* **29.** 293-296. [English summary copied *verbatim.*] **73**

It is indeed a blot upon Twentieth Century civilization that we continue to face the problem of rabies. Yet until such time as local, national and international anti-rabies campaigns are developed with complete success, the individual physician or health officer will continue to be confronted with the problem of the management of human exposure.

Antirabies vaccine for human patients is an excellent tool when properly applied ; injudiciously used, it becomes a lethal weapon. Comprehensive statistical studies have indicated the ratio of cases of neuroparalytic accidents among persons receiving antirabies treatment to be of the order of one per 3,000. The true ratio may well be greater, however, because of cases undetected, improperly diagnosed or purposely unreported.

The danger of treatment complications actually far exceeds that of rabies from exposure other than actual bites. Recommended procedures for local treatment of bite wounds, along with indications and contraindications for vaccine treatment are presented to serve as a guide for handling human exposures—real or imaginary—to rabid animals.

POWELL, H. M. & CULBERTSON, C. G. (1950.) **Cultivation of fixed rabies virus in embryonated duck eggs.**—*Publ. Hlth. Rep., Wash.* **65.** 400-401. **74**

A fixed rabies virus was inoculated into seven-day incubated duck eggs. The eggs were incubated for a further 14 days and the virus harvested. In this way duck embryo virus titres up to 10^{-5} have been obtained. The duck egg passaged virus was used for immunizing mice, six doses being given over a period of two weeks. Three days after the last injection the mice were challenged with mouse brain virus. It was reckoned that the immunized mice resisted 7,700 LD_{50} of the challenge virus. —D. LUKE.

WARREN, J., RUSS, S. B. & JEFFRIES, H. (1949.) **Neutralizing antibody against viruses of the encephalomyocarditis group in the sera of wild rats.**—*Proc. Soc. exp. Biol., N.Y.* **71.** 376-378. **75**

The possibility that the wild rat might serve as a reservoir for viruses of this group was studied because the albino rat reacted to experimental inoculation with an inapparent infection and because the human cases of Manila three-day fever had occured in a camp infested with rats. Mice were used in tests in which neutralization of 100 M.L.D. was considered to be a positive indication of specific antibody.

The sera of 83 out of 442 wild rats tested against encephalo-myocarditis virus were found to be positive. The majority neutralized 10,000 M.L.D. Twenty-two of the positive sera were also tested against MM and Mengo encephalomyelitis viruses and these were also neutralized to the same extent. Nearly all the rats tested were *R. norvegicus*, some were *R. alexandrinus* and some *Sigmodon hispidus.* None of the latter species (21 in number) gave a positive serum. 63 sera from nine other species of small wild animals were tested in the same way and none neutralized even small amounts of virus.—H. H. SKINNER.

I. DICK, G. W. A., SMITHBURN, K. C. & HADDOW, A. J. (1948.) **Mengo encephalomyelitis virus : isolation and immunological properties. [Monkeys.]**—*Brit. J. exp. Path.* **29.** 547-558. **76**

II. DICK, G. W. A. (1948.) **Mengo encephalomyelitis virus : pathogenicity for animals and physical properties.**—*Ibid.* 559-577. **77**

III. DICK, G. W. A. (1949.) **The relationship of Mengo encephalomyelitis, encephalomyocarditis, Columbia-SK and M.M. viruses.** —*J. Immunol.* **62.** 375-386. **78**

IV. WARREN, J., SMADEL, J. E. & RUSS, S. B. (1949.) **The family relationship of encephalomyocarditis, Columbia-SK, M.M. and Mengo encephalomyelitis viruses.**—*Ibid.* 62. 387-398. 79

V. OLITSKY, P. K. & YAGER, R. H. (1949.) **Hemagglutination by Columbia SK, Columbia M.M., Mengo encephalomyelitis and encephalomyocarditis viruses: experiments with other viruses.**—*Proc. Soc. exp. Biol., N.Y.* 71. 719-724. 80

I. During the latter half of 1946 a virus was isolated from five distinct sources at the Entebbe Yellow Fever Research Institute in East Africa. It was first isolated from the cerebrospinal fluid and central nervous system of a spontaneously paralysed afebrile rhesus monkey housed in an outdoor compound. It was then found in two pooled batches of mosquitoes caught in the area and in the serum of a mongoose trapped in the compound. A research worker then developed an acute febrile illness coupled with some involvement of the C.N.S. and the virus was isolated from the blood. The common identity of all these strains of virus was established by neutralization tests in mice. In 1947 the same virus was isolated from the blood of another unused captive rhesus monkey.

The virus was named after the district in which it was discovered. Neutralizing antibodies to Mengo encephalomyelitis virus were found in the sera of 9 out of 29 unused captive monkeys and in the serum of one out of four trapped mongooses.

II. The strains from all six sources (see I.) produced 100% mortality in 5-6-week-old Swiss mice after a very few intracerebral passages. In the early passages the first symptoms were usually a flaccid paralysis of both hind limbs with involvement of the front limbs if the mouse survived for four days. After the second intracerebral passage prostration and death usually followed rapidly after the onset of symptoms which commenced on the second day with large virus doses and after 5-7 days with doses of about 100 LD_{50}. After further passaging death occured in 24-48 hours without previous symptoms.

After 93 passages of one strain the titre of brain tissue was $10^{-8\cdot5}$ by the intracerebral route, slightly less by the intraperitoneal and subcutaneous routes, and $10^{-5\cdot3}$ by the intranasal route.

Within 30 min. of intranasal instillation of virus there was a viraemia which persisted for at least 72 hours with a peak in titre (10^{-4}) at the fourth hour.

No significant variation in susceptibility to extraneural inoculation was detected in mice 3-12 weeks old. Spread by contact in experimental mice did not occur.

The g. pig was found susceptible and showed a febrile response after intraperitoneal or subcutaneous inoculation. Three out of 22 developed paralysis. After intracerebral inoculation death occured within 24 hours. Rabbits were found to be insusceptible.

Two out of nine rhesus monkeys inoculated with a monkey strain developed paralysis. Four out of five *C. aethiops* monkeys developed paralysis and virus titres of the blood reached $10^{-6\cdot3}$.

Gradocol membrane filtrates indicated the size of the virus to be 10-15 mμ. Suspensions of mouse brain in 10% normal monkey serum survived for 20 min. at 94°C. and for 5 min. at 98°C. The resistance of the virus to various chemical agents was also investigated.

III & IV. These four viruses are closely related immunologically and are distinct in this respect from over a score of other viruses. A common name for the group is required. The group has a wide geographical distribution. Columbia-SK and M.M. viruses were isolated in New York, encephalomyocarditis virus in Florida, Mengo encephalomyelitis virus in Uganda and specific antibodies were found in man in an epidemic of three-day fever in Manila [Smadel, J. E. & Warren, J. (1947)].

The cotton rat and hamster are suspected as being the source of two of the viruses and specific antibodies have been found in many trapped wild rats in the U.S.A. and in the mongoose in Uganda. Such animals possibly act as a host for the virus which may be mosquito-borne.

In experimental animals the viruses induce a rapidly fatal disease in the mouse, hamster and cotton rat. In the albino rat, rabbit and rhesus monkey infection is inapparent. The chick embryo is readily infected. All the viruses are pantropic. In the mouse when the rapidly fatal disease is avoided by using the intraperitoneal route of inoculation an acute interstitial myocarditis characterized by necrosis of muscle fibres accompanied by an inflammatory cellular reaction is produced.

All the viruses are readily filtered and two have been shown to have a size of 8-25 mμ. They are somewhat unstable in the dried state.

V. Tests for HA activity were applied to 21 neurotropic viruses using eight types of erythrocytes *viz* : sheep, human 0, fowl, horse, hamster, dog, cat and g. pig. Mouse brain was used as a source of virus and the only viruses to

agglutinate any of the cells in over 100 experiments were Columbia SK, Columbia M.M., Mengo encephalomyelitis and encephalomyocarditis. Only sheep cells were agglutinated by these four viruses and cross-inhibition tests showed that they were related. The test has to be carried out at 5°C. At room temperature these viruses are eluted from the cells without losing their HA activity.

The viruses giving negative results were—Eastern, Western and Venezuelan equine encephalomyelitis, New Jersey and Indiana strains of vesicular stomatitis, louping-ill, rabies, herpes simplex, lymphocytic choriomeningitis, Lansing and MEF1 strains of poliomyelitis, Theiler's FA and TO, West Nile, Japanese B, St. Louis and Russian Far East encephalitis.

—H. H. SKINNER.

HOWITT, B. F., DODGE, H. R., BISHOP, L. K. & GORRIE, R. H. (1948.) **Virus of eastern equine encephalomyelitis isolated from chicken mites (*Dermanyssus gallinae*) and chicken lice (*Eomenacanthus stramineus*).**—*Proc. Soc. exp. Biol., N.Y.* **68.** 622-625. **81**

From *D. gallinae* collected in Tennessee the authors isolated a virus by mouse inoculation methods. The virus was lethal for embryonated eggs in 24 hours and for g. pigs in 48 hours. The latter developed symptoms of encephalomyelitis. Neutralization and immunity tests indicated that the virus was that of the eastern strain of equine encephalomyelitis.

From the louse *Eomenacanthus stramineus* the Eastern strain was isolated. Antibodies were found in the blood of 2 out of 20 fowls on one farm and in the blood of one cow and 3 out of 11 fowls examined on another farm.

The significance of these findings is discussed briefly.—D. LUKE.

O'FARRELL, J. D. (1950.) **The intramuscular injection of synthetic Vit. B_1 (Thiamin Hydrochloride) in catarrhal fever of the bovine.**—*Irish Vet. J.* **4.** 54-57 & 60. **82**

The case histories of eight cattle with bovine catarrhal fever are given. Sulphanilamide and yeast therapy were ineffective, but intramuscular injection of 3 × 2 ml. *i.e.* 300 mg. of vitamin B_1 followed by 100 mg. daily for two days were satisfactory.—E. EDEN.

HARNACH, R., HUBIK, R. & CHVÁTAL, O. (1950.) Isolace chřipkových virú v ČSR. **[Isolation of the virus of swine influenza in Czechoslovakia.]**—*Čas. československ. Vet.* **5.** 289. **83**

The authors succeeded in isolating four pure strains of the virus of swine influenza. These strains are propagated in the chick embryo and are pathogenic for mice by intranasal infection. The sera of clinically healthy pigs never showed any antibodies in the haemagglutination test, the sera of clinically infected pigs gave not quite 30% of positive tests.—A. MAYR-HARTING.

VERLINDE, J. D. (1950.) Over myelitis bij het varken en de hond. Vergelijking van het histopathologische beeld met poliomyelitis van de mens. **[Comparison between myelitis in pig and dog, and poliomyelitis in man.]**—*Tijdschr. Diergeneesk.* **75.** 491-496. [English summary.] **84**

V. states that so far there has been no evidence of an aetiological relationship between human poliomyelitis, Teschen disease in pigs and the spinal form of an idiopathic encephalitis in dogs which is different from distemper encephalitis. There is, however, a marked resemblance between the lesions of Teschen disease and poliomyelitis, although in Teschen disease the lesions tend to be disseminated over the whole of the central nervous system. The spinal form of canine encephalitis resembles poliomyelitis even more than Teschen disease because lesions are confined to the spinal cord.—E.G.

ANON. (1948.) Virus de la maladie de Carré. **[Distemper and its relation to poliomyelitis.]**—*Rapp. Inst. Past., Maroc.* p. 21. **85**

The virus obtained from the spinal cord of a dog with a nervous form of distemper was compared with that of human poliomyelitis.

The canine virus was established in rabbits, and cross-immunity tests between the two viruses, in rabbits, showed that they were antigenically identical. Serum prepared against the canine virus neutralised the human virus and *vice versa*.

If these results are confirmed, important consequences may result.—R. M. LOOSMORE.

LUCAM, F. (1949.) La peste aviaire en France **[Fowl plague and Newcastle disease in France.]**.—*Rev. Path. comp.* **49.** 390-396. **86**

Fowl pest has been recognized in France since the end of 1948. Both true fowl plague virus and Newcastle disease virus have been isolated. The difficulties of differential diagnosis are discussed.

Aluminium hydroxide adsorbed vaccines have been prepared for each virus and a mixed virus has also been used. Single vaccination confers only a short immunity. L. prefers two injections eight days apart. Immunity lasts

about four months only unless reinforced by further injections of vaccine. The difficulties of control in the field are discussed.—D. LUKE.

DOBSON, N. (1949.) **Newcastle disease.**—*Vet. Rec.* **61.** 565-567. **87**

A review of the history of Newcastle disease in England. Symptoms and P.M. findings are briefly described. There is a short note on immunization and an outline of the statutory regulations governing the control of the disease.—D. LUKE.

PAGNINI, U. (1950.) La pseudo-peste en Italie. **[Newcastle disease in Italy.]**—*Bull. Off. internat. Epiz.* **33.** 3-16. **88**

Towards the end of 1940 a serious outbreak of disease appeared among poultry in Northern Italy. On account of the war control measures could not be applied and within a short time the disease had spread to the whole of Italy.

As a result of cross-immunity tests carried out in 1942, P. is satisfied that the epidemic was Newcastle disease. On the basis of immunological tests he believes that only one type of virus is involved in the outbreaks in Italy.

An egg embyro vaccine has given satisfactory results in the field.—D. LUKE.

BEACH, J. R. (1949.) **Avian pneumoencephalitis (Newcastle disease) in the California official egg laying contest during the 1947-48 test year.**—*Poult. Sci.* **28.** 307-308. **89**

Newcastle disease appeared in a pen of 26 birds four weeks after they had arrived. The onset of the disease was characterized by a marked decline in egg yield. During the period of the test several other pens became affected. At the end of the test three birds out of each of the 38 pens were subjected to a haemagglutination-inhibition test. The reactions indicated that 22 out of the 38 pens had at some time been infected. The source of the infection was not determined. The course of the infection was mild and no deaths were attributed to it. The fall in egg yield was only temporary.

The implications of the H.I. test result are discussed. The fact that infection did not involve all the birds in some pens is taken as an indication that, contrary to the usually accepted notion, morbidity is not necessarily 100%.

—D. LUKE.

BEAMER, P. D., SUTHERLAND, A. K., & SCHMITTLE, S. C. (1949.) **Studies on Newcastle disease. II. The resistance of Newcastle disease virus to formaldehyde fumigation.**—*Amer. J. vet. Res.* **10.** 384-387. **90**

Cotton wool, eggshells, glass coverslips, pieces of metal and wood were immersed in a 1 : 99 dilution of allanto-amniotic fluid from embryos which had died after inoculation with virulent virus. After fumigation with formaldehyde the above materials were tested for virus, using 35 ml. and 70 ml. of formalin per 100 c. ft. of space. The virus survived on all the materials used for at least 24 hours without fumigation in a forced draught incubator. Tests were made in three positions in the incubator, *i.e.* in the bottom, middle and top trays. Using 35 ml. formalin per 100 c. ft., the virus survived two hours' fumigation on cotton wool, one hour on glass and wood, one and a half hours on eggshell and three-quarters of an hour on metal. In a second series of experiments the virus survived two and three hour fumigation periods (using 35 ml. formalin per 100 c. ft.) in allanto-amniotic fluid, chorioallantoic membrane and lyophilized pellets of virus, but it was destroyed when 70 ml. formalin per 100 c. ft. of space was used.—D. LUKE.

BEAUDETTE, F. R., BIVINS, J. A. & MILLER, B. R. (1949.) **Newcastle disease immunization with live virus.**—*Cornell Vet.* **39.** 302-334. **91**

A review of literature recording the use of live virus in immunization. These in general refer to the use of virulent virus introduced *via* an unnatural route, or attenuated in some way, or virus modified by passage in birds other than fowls, or passage in embryonated eggs.

One hundred and five strains of virus were examined in the hope that some strains might be of sufficiently low pathogenicity to be used for immunization purposes without having to undergo modification in any way. Strain No. 3 seemed to fulfil these conditions. Vaccination was carried out either by intramuscular injection or by the "stick" method.

Preliminary trials with this virus indicated a post vaccination mortality of 1·73% and that vaccinated stock could withstand challenge with fully virulent virus 15 days later. Field trials on 20 farms involving over 80,000 chicks gave a 1·82% mortality. Vaccination in the case of three lots of chicks after the appearance of symptoms did appear to reduce mortality. Vaccinated birds may be a source of infection for about three weeks, but contact requires to be close for spread of infection to occur.

In the case of young birds, vaccination causes some loss of appetite for 2-3 days and respiratory symptoms are usually observed. Deaths usually occur within the first ten days. In older birds the effect is milder and specific mortality decreases with age.

In five flocks of laying birds vaccination caused a drop in egg production about the 5th-6th day. Production began to rise again about the 8th-12th day and was normal again by the 20th day.—D. LUKE.

OLSON, C., Jr., BLORE, I. C., WOODRING, F. R., & MCGRATH, C. B. (1950.) **A field test of immunization against Newcastle disease (pneumoencephalitis).**—*J. Amer. vet. med. Ass.* **117.** 144-148. [Authors' summary copied *verbatim.*] **92**

The flocks producing hatching eggs for five Nebraska hatcheries were immunized with live virus Newcastle disease (ND) vaccine. Prior to vaccination, about 10% of the flocks showed a significant HI [haemagglutination-inhibition] titer of greater than 40. Following vaccination, about 65% of the flocks showed a significant HI titer of greater than 40. The level of titer seemed to have no relation with time interval between vaccination and the test, up to 70 days post-vaccination.

The reaction following vaccination was more severe in birds in egg production than it was in younger birds. Among flocks that were laying well, there was a marked decrease of egg production in 65% of the vaccinated flocks.

Analysis was made of 51 outbreaks of ND in young chickens during the hatching season following the vaccination program. In the case of one hatchery, whose producing flocks had been vaccinated, many cases of ND occurred within seven days of arrival on a farm in chicks less than seven days of age. This suggests that the parental immunity can be overcome by infection developed in a hatchery or while enroute to a farm.

Of the 51 cases of ND examined, 33 occurred within seven days of arrival on the farm. These data indicate that infection with ND commonly occurs at the hatchery or during transit to the farms.

PRIER, J. E. (1950.) **Treatment of infectious sinusitis of turkeys.**—*J. Amer. vet. med. Ass.* **117.** 139-141. [Author's summary copied *verbatim.*] **93**

Aureomycin and streptomycin inhibited the agent of infectious sinusitis when sinus exudate was incubated with each antibiotic agent before inoculation into susceptible turkeys. Injection of 50 mg. of aureomycin into the sinuses eliminated the sinus swelling in 8 of 13 naturally infected birds. Intramuscular injection of 100 mg. of aureomycin did not alter the symptoms or lesions in 17 naturally infected birds. Intramuscular injection of 100 mg. of aureomycin into 11 experimentally infected birds failed to alleviate the symptoms or cure the disease.

PINKERTON, H. (1950.) **The morphology of viral inclusions and their practical importance in the diagnosis of human disease.**—*Amer. J. clin. Path.* **20.** 201-207. **94**

In five virus diseases diagnosis is completely dependent on the recognition of viral inclusions : molluscum contagiosum, inclusion disease (salivary gland virus), Adam's infantile pneumonia, Goodpasture's infantile pneumonia, Hecht's giant-cell pneumonia. In other diseases diagnosis depends largely on inclusions, *e.g.* trachoma, inclusion conjunctivitis, lymphogranuloma venereum, psittacosis, herpes encephalitis, louping-ill. A number of injurious agents can produce structures closely simulating nuclear viral inclusions, *e.g.* metallic poisons and toxins liberated from burned tissue. Electron microscopy will add much to our knowledge of elementary bodies and their relation to viral inclusions.—W. R. BETT.

ANON. (1948.) **A proposed provisional definition of poliomyelitis virus.**—*Science.* **108.** 701-705. **95**

Proposals are put forward by a Committee whereby it is hoped to curb the loose identification of neurotropic viruses as being strains of the poliomyelitis virus, a true strain of which can be identified by the clinical and histopathological manifestation of the disease produced in monkeys and by its host range, immunological relationships and physico-chemical properties. Lansing, MEF,Y-SK, and P4 are examples of strains which have the required specific properties.

To avoid the term, 'human,' 'monkey,' or 'murine-adapted' strain it is suggested that a strain should be designated by the use of a code giving its complete history. Thus "Y-SK—New Haven—1937—$M_{22}CR_5m_{10}$" would indicate first the name of the patient from which the virus originated and then the place and year and the number of serial passages in the monkey, cotton rat and mouse.

Other viruses which do not fulfil the specific requirements but have nevertheless been classified as poliomyelitis virus are Theiler's, TO, FA, GDVII, Columbia-SK and MM. The first four of these murine neurotropic viruses are immunologically related and should be considered as spontaneous mouse encephalomyelitis virus.

Columbia-SK and MM viruses are not related to the latter group but are related to encephalomyocarditis virus [see *V.B.* **16.** 150].

These three viruses are highly viscerotropic and their ability to produce paralysis in the rodent associated with lesions in the anterior horn cells of the spinal cord is a property shared by many other viruses and should not be taken to indicate that they are poliomyelitis virus.

Columbia-SK virus probably originated from cotton rats used to passage the SK strain of poliomyelitis. MM virus probably originated from a hamster inoculated with material from a human case.—H. H. SKINNER.

FRANCIS, T., JR., BROWN, G. C. & PENNER, L. R. (1948.) **Search for extrahuman sources of poliomyelitis virus.**—*J. Amer. med. Ass.* **136.** 1088-1093. [Authors' summary copied *verbatim.*] **96**

Attempts to isolate the virus of poliomyelitis from various extrahuman sources in epidemic areas have been made by inoculation of monkeys and of cotton rats and mice. Thirty-three wild mice, 112 wild rats, 3 muskrats, 4 cats, 1 horse, many chickens, cows and hogs, and 43 pools of insects, 38 of which were flies, representing approximately 15,300 individual specimens, have been so tested. In addition, 24 samples of sewage, 2 of sludge, 1 of soil, 10 of water and 3 of milk have been examined. The animals, the insects and the other specimens were collected during epidemics of the disease and usually from locations in close proximity of patients.

A mouse-paralyzing agent was isolated from one pool of tissues from wild rats caught in Fort Worth, Texas, in 1943. It has not been identified. Of 38 pools of flies, one collection of 23 Sarcophaga spp. from rural Tennessee, 1945, was shown to contain poliomyelitis virus. In all other attempts to isolate the virus the results were negative.

The serum of 2 cows, a horse, a rabbit and 46 wild rats have been tested for neutralizing antibodies to the Lansing strain of virus. All were negative with the exception of that of a wild rat obtained from Detroit in 1944, which had definite virus-neutralizing capacity.

Fly trappings, using fresh normal adult human stool as bait, have shown that certain flies Phaenicia, Phormia, Sarcophaga, Muscina and Calliphora, are the predominant genera attracted to human feces with the methods of collection used; the common house fly, *Musca domestica*, is not.

RHODES, A. J., CLARK, E. M., KNOWLES, D. S., SHIMADA, F., GOODFELLOW, A. M., RITCHIE, R. C. & DONOHUE, W. L. (1950.) **Poliomyelitis virus in urban sewage. An examination for its presence over a period of twelve months.**—*Canad. J. publ. Hlth.* **41.** 248-254. [Authors' summary copied *verbatim.*] **97**

An examination of sewage collected at two plants of the City of Toronto has been conducted regularly for about 12 months. Virus was recovered from both plants at the height of the epidemic in July, August and September, 1949. Virus was isolated from sewage collected at one of the plants which serves a residential area in June, 1949, 5 weeks before the first reported case of poliomyelitis in the district.

It has been found that monkeys will tolerate up to 500 ml. of etherized sewage, if inoculated intraperitoneally in daily amounts of 50 ml.

Virus in sewage has been shown to survive in the refrigerator for at least 90 days after the collection.

CORDY, D. R. & GORHAM, J. R. (1950.) **The pathology and etiology of salmon disease in the dog and fox.**—*Amer. J. Path.* **26.** 617-637. **98**

This important paper indicates that a rickettsial organism resembling in many ways *Rickettsia canis* is the causal organism of salmon disease in dogs and foxes. Salmon disease occurs in dogs and foxes which have eaten fish parasitized by the encysted metocercariae of the small fluke *Troglotrema salmincola*. Dogs and foxes were infected experimentally by feeding with infected fish and also by intraperitoneal inoculation with tissue suspensions from infected dogs and foxes. The gross lesions of the disease and their histology and the morphology of the causal organisms are described. Evidence is produced that the infection was established and maintained in mice through three generations. This appears to be the first report of a disease which is caused by a rickettsia and which is transmitted by a trematode. The occurrence of this disease would therefore require (a) the rickettsial organism, (b) the fluke, (c) the fish, and (d) the dog or fox.—M.C.

RECEVEUR, P. & HUGAUD, G. (1949.) Existence de Rickettsia canis au Tchad. [**Canine rickettsia infection in Chad.**]—*Rev. Elev. Méd. vét. Pays trop.* **3.** 45. **99**

A brief description of a fatal case in a bitch, which confirms the existence of *Rickettsia canis* in that part of Africa.—ROY MACK.

See also abstr. 272-274 (reports, Australia).

IMMUNITY

ANDERSON, S. G. (1950.) **A thermostable inhibitor of haemagglutination found in animal tissues.**—*Aust. J. Sci.* **12.** 147-148. **100**

An examination was made of the amount of thermostable haemagglutinin inhibitor readily extractable from the ground tissues of the mouse, rat, g. pig, rabbit, sheep, cat, ferret and man. The alimentary tract wall, lymph nodes, thyroid and suprarenal glands and uterine mucosa yielded little inhibitor. A high titre of inhibitor was found in a few tissues of each species, usually either the sublingual gland or submaxillary gland or both. The main results are presented in a table. The inhibitor was inactivated by receptor destroying enzyme.

—D. F. STEWART.

DUDOS, R. J. (1949.) **Immunological aspects of B.C.G. vaccination.**—*Amer. Rev. Tuberc.* **60.** 670-674. **101**

The author emphasizes that BCG immunization, like any other public health measure, must satisfy certain minimal requirements of dependability, predictability and immunizing efficacy. There are at least four independant factors which are responsible for the degree of immunity obtained in an individual undergoing immunization ; namely, the number of living micro-organisms injected, their physiological state, their level of virulence, and the susceptibility of the immunized animal. The analysis of these factors and the development of techniques for the measurement of true protective immunity (not tuberculin allergy) are prerequisites for an intelligent evaluation of BCG immunization.—L. M. JONES.

POTOSSI, O. (1948.) Tessuti embrionali di pollo coltivati in vitro in presenza di anatubercolina Petragnani tipo integrale. **[Cultivation *in vitro* of chick embryo tissue in the presence of Petragnani's integral type anatuberculin.]** —*G. Batt. Immun.* **38.** 17-44 & 123-128. [English, French & German summaries]. **102**

Cultivating embryonal fowl liver and spleen tissue *in vitro* in the presence of Petragnani's integral type anatuberculin, P. observed that after a period cell proliferation came to a standstill. This he interpreted as being a negative phase caused by the anavaccine. The negative phase was followed by a phase of accentuated growth, which he attributed to an allergic hypersensitizing factor. There was necrobiosis. Soon after this phase the cultures died because of the degenerative effects of anatuberculin. When an equal part of Ringer's solution was added to the anatuberculin immediate proliferation of cells was observed, there was no negative phase and the positive phase was prolonged. Using this modified solution there was no necrobiosis.—E.G.

HEARD, D. H., HINDE, I. T. & MYNORS, L. S. (1949.) **An experimental study of haemolytic disease of the new-born due to iso-immunization of pregnancy.**—*J. Hyg., Camb.* **47.** 119-131. **103**

In this approach to the study of haemolytic disease of the new-born in man, rabbits were used in an attempt to produce evidence of iso-immunization of pregnancy in laboratory animals. Nineteen rabbit does were inoculated each with the whole blood of a buck to which they were later mated. Nine does formed antibodies in their sera and some of their young, which had inherited a paternal antigen incompatible with their dam's antiserum, had *in vivo* sensitization of the red cells. This was demonstrated by a direct antiglobulin sensitization test of the washed red blood cells of the young rabbits. If the cells had been sensitized by the maternal antiserum agglutination occurred in the presence of anti-globulin serum. Despite having sensitized red cells the young rabbits were unaffected clinically. Haematological and histological examination of the young at various ages indicated slight changes in the haemopoietic system but the pathological processes comparable to those seen in foals or in human babies were not present.—L. M. JONES.

See also absts. **11** (anthrax vaccine); **25** (swine erysipelas); **31** (pullorum disease, agglutination); **38** (*Brucella* antigens); **39** (*Brucella* allergen); **43** (brucellosis vaccine); **46** (blackleg vaccines); **71-74** (rabies); **75** (antibodies against encephalomyocarditis virus); **91 & 92** (Newcastle disease); **137** (nutrition and antibodies); **258** (*Vibrio fetus* agglutination).

PARASITES IN RELATION TO DISEASE [GENERAL]

KOUTZ, F. R. (1949.) **Check list of parasites of domestic animals reported in Ohio.**—pp. 14. Ohio : State University. **104**

The data recorded here are intended to supplement Dikman's (1945) "Check List of the Internal and External Animal Parasites of Domestic Animals in North America" [See *V.B.* **17.** 81], and to provide as complete a list as possible of parasites recorded in one particular State.—M. L. CLARKE.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

ROBERTS, F. H. S. (1950.) **The tail-switch louse of cattle,** *Haematopinus quadripertusus* **Fahrenholz.**—*Aust. vet. J.* **26.** 136-138. **105**

The characters by which *H. quadripertusus* may be distinquished from *H. eurysternus* are discussed and figures illustrating the differences in the sternal plates and the apical abdominal segments of the female are given. The paper includes a key to the sucking lice found on Australian cattle. *H. quadripertusus* has been identified from specimens from Queensland, New Guinea, the Solomon Islands and the West Indies, and records indicate that it is a tropical species.—MARION T. SCOTT.

SQUIRE, F. A. (1950.) **Age-grouping of tsetse-flies as an aid in the study of their bionomics.**—*Nature, Lond.* **165.** 307-308. **106**

S. records observations on *Glossina palpalis* in Sierra Leone over the period July 1948-June 1949. Approximately five thousand flies were examined and classified into three age groups, according to wing tear and colour.

Analysis of results shows that emergence must continue all the year round with only slight seasonal variance. However, judging from the numbers of unmated females there appear to be two peaks of emergence, during the wettest and again during the hottest (if not the driest) months. The emergence peak occurring in the rainy season is of special interest because at this period the riverine pupal sites are covered by several feet of water. S. suggests that the fly anticipates events and larviposits in sites removed from this danger.

Consideration of the male : female ratio shows it to be highest at the beginning and the end of the rains and it is concluded that at these times conditions are most favourable to gestation. Comparing the ratio in the three age groups it is seen to be highest in the middle group and lowest in the younger flies. It follows that the male : female ratio is of value only if the age of the flies is also stated.

The results are illustrated by table and graphs.—K. B. SINCLAIR.

HORNBY, H. E. (1949.) **Tsetse problems in relation to those of soil conservation.**—*Bull. agric. Congo belge.* **40.** 2189-2195. [In English.] **107**

The association between tsetse flies and soil erosion is discussed. A statement is quoted that the presence of tsetse flies through their transmission of trypanosomiasis, prevents overstocking and thereby protects the land from erosion. However, it is also argued that tsetse flies infest the more fertile regions and force the inhabitants to live on the poorer and more erodable lands.

The methods of tsetse fly control are reviewed in relation to their association with soil erosion. The methods listed include direct action against the flies, the elimination of their food supply, and the removal of the vegatation necessary for their survival. The dangers of soil erosion are associated with the last of these methods, where the destruction of the vegetation is widespread and unregulated. Where clearing of vegetation is confined to those species for which the fly shows preference, there is no likelihood of erosion.

A programme for fly eradication is discussed. H. recommends the elimination of game and the selective destruction of vegetation, followed by efforts to improve the quality of the cleared lands by a ground cover of selected grasses, and sound stock management.

—D. W. JOLLY.

MOGGRIDGE, J. Y. (1949.) **Climate and the activity of the Kenya coastal** *Glossina.*—*Bull. ent. Res.* **40.** 307-321. [Author's summary slightly modified.] **108**

This paper deals with *Glossina pallidipes*, *G. austeni* and *G. brevipalpis* as they occur on the Kenya coast.

Temperature and saturation deficiency both exert a generally inverse effect on the activity and apparent density of both *G. pallidipes* and *G. austeni*. True density also varies inversely as the saturation deficiency.

"Rush activity" is a term used to express the exceptional activity displayed by both *G. pallidipes* and *G. austeni* in the morning during periods of severe dry weather. This extreme form of activity is displayed by both sexes. The theory that rush activity is really compressed activity induced by very high temperatures and saturation deficiency later in the day is supported in a discussion of the reaction of *G. pallidipes* in two adjacent vegetation types under normal and abnormal dry season conditions.

Teneral [immature] tsetses were taken in remarkably small numbers on all rounds. Data were kept for *G. pallidipes* only. Females formed a large proportion of the catches of teneral tsetses. Teneral tsetses show no apparent preference for marginal areas ; they are more numerous in the wet season.

The activity and density of female *G. pallidipes* appeared to be influenced by the same

factors and in the same way as the males. Adequate data on *G. austeni* were obtained from the forest only, but there are indications of seasonal fluctuations in female percentage. Females of both species are distributed evenly throughout the vegetation types and no marked vegetational preferences are shown. The females of *G. brevipalpis* formed only a very small proportion of the total catches.

The numbers of marked tsetses of all three species recaptured were very small indeed. The majority were recaptured after the lapse of a few days in the same locality as that in which the original markings had been made. *G. pallidipes* was recaptured in greater numbers during the humid season.

WATERHOUSE, D. F. (1950.) **Studies of the physiology and toxicology of blowflies. XIV. The composition, formation, and fate of the granules in the malpighian tubules of *Lucilia cuprina* larvae.**—*Aust. J. sci. Res.* Ser. B. **3.** 76-112. **109**

These studies [see *V.B.* **19.** 346] were continued by Waterhouse who described in detail his extensive investigations. This paper contains much of interest for those concerned with insect physiology.

It is concluded that the granules in the malpighian tubules are merely waste products formed as a result of the specialized nature of other cells in the accumulating region and stored there by virtue of the absence of peristalsis and of adequate flushing of water down the tubules.—H. McL. GORDON.

NORRIS, K. R., ROULSTON, W. J. & SNOWBALL, G. J. (1950.) **Observations on the control of the cattle tick with preparations of D.D.T. and benzene hexachloride (B.H.C.) in dips.**—*Aust. J. agric. Res.* **1.** 165-177. [Authors' summary copied *verbatim.*] **110**

Two formulations of DDT and one of BHC were tested against the cattle tick *Boophilus microplus* Canest. The DDT preparations, a dispersible powder and a dispersible paste, were not as toxic to the tick as the colloidal formulation reported on by Hitchcock and Mackerras (1947) [see *V.B.* **19.** 284]. The BHC preparation at a concentration of 0·05 per cent. gamma isomer killed almost all ticks but the period of protection against reinfestation was shorter than that afforded by this colloidal DDT preparation.

The results of analyses are presented to illustrate the concentrations maintained during dippings and the rates of dispersion and settling.

BRUMPT, E. & CHABAUD, A.-G. (1947.) L'infestation par des ixodinés provoque-t-elle une immunité chez l'hôte ? I. Note préliminaire. **[The question of immunity in *Ixodes* infestations. I. Preliminary note.]**—*Ann. Parasit. hum. comp.* **22.** 348-356. **111**

Species of *Hyalomma*, *Dermacentor* and *Rhipicephalus* did not, in general, produce an immune response. Some evidence was provided to corroborate that *D. pictus* did produce immunity in the rabbit.—JAS. G. O'SULLIVAN.

PAVLOV, P. (1947.) Note critique sur la maladie dénommée tick paralysis. **[Tick paralysis.]**—*Ann. Parasit. hum. comp.* **22.** 345-347. **112**

P. points out differences between the condition described as tick paralysis in the U.S.S.R. and the classical disease observed elsewhere. They differ in the clinical symptoms, the incubation period, and the species and number of ticks involved. The vector concerned is *Ornithodoros lahorensis* and although Russian authors stated that only the third nymphal stage transmits the disease, P. doubts this statement.

It appears that *Ornithodoros* must be present in large numbers to provoke the condition. This suggests that a quantity of toxin is required and the intoxication theory is supported by the nature of the disease.—K. B. SINCLAIR.

OLSEN, O. W. & BRACKEN, F. K. (1950.) **Occurrence of the ear mite, *Raillietia auris* (Leidy, 1872), of cattle in Colorado.**—*Vet. Med.* **45.** 320-321. **113**

A report of the finding at autopsy of ten female mites in the bulla tympanica of a yearling heifer. The carriage of the head had been abnormal.—K. B. SINCLAIR.

ENDREJAT, E. (1950.) Uber den derzeitigen Stand der Schafräudebekämpfung. **[Control of sheep scab.]**—*Berl. Münch. tierärztl. Wschr.* No. 1. pp. 7-10. **114**

The present position of sheep scab in Western Germany is not satisfactory, for the laws and methods of husbandry are such that outbreaks are not reported and there is a lack of dipping facilities.—ROY MACK.

See also absts. **81** (eastern equine encephalomyelitis virus from chicken mites and lice); **180** (phenamidine in mange); **210** (action of D.D.T.); **228** (benzene hexachloride); **288** (book, parasitology).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

JONATHAN, S. R. (1950.) **The life history of rumen flukes of cattle in New Zealand.**—*Aust. vet. J.* **26.** 149-151. **115**

Planorbis kahuika was shown to be a possible intermediate host for the paramphistomes of cattle in New Zealand. The snail is found on the stems and under surface of the leaves of living water weed, especially *Apotamogeton*, usually in water 1-3 feet deep. Clear water is preferred. Eggs are laid throughout the year, but spring is the main breeding season and in midsummer 90% of the snails are immature.

A table shows the incidence of paramphistomes in 425 cattle slaughtered at Petone and drawn from the Wellington province. Almost 50% were infested and the number of parasites per animal ranged from 3 to more than 750. More than 750 parasites were found in 3·8% of the cattle.—H. McL. GORDON.

DOUGHERTY, E. C. (1949.) **The phylogeny of the nematode family Metastrongylidae Leiper, [1909]: A correlation of host and symbiote evolution.**—*Parasitology*, **39.** 222-234. **116**

D. reviews the history of the taxonomy of the family Metastrongylidae. The probable phylogeny of the family correlating symbiote and host evolution is discussed on the basis of morphological and biological evidence. Special consideration is given to the primitive genera *Metastrongylus* and *Heterostrongylus*. The characteristic diagnostic features of the family and its subfamilies are given and the 22 component genera are listed. Some new synonymies are proposed.—FERGUS S. MCCULLOUGH.

DOUGHERTY, E. C. (1949.) **A list of the trichostrongylid lungworms (Phylum Nematoda) and a key to the six genera.**—*Parasitology*. **39.** 218-221. **117**

The six genera and 21 species of the trichostrongylid lungworms (Subfamily Skrjabingylinae) are listed, together with the type species of each genus and the type host of each species. The list is followed by a key to the genera of the Subfamily Skrjabingylinae indicating the critical generic criteria. The key is primarily based on male characters.

—FERGUS S. MCCULLOUGH.

BORCHERT, A. & TIMM, W. (1949.) Beobachtungen uber die Lungenwurmkrankheit des Schafes und Untersuchungen über die Uberwinterung der Larven von Dictyocaulus filaria. [**Lungworm disease in sheep and hibernation of larvae of** *Dictyocaulus filaria*.]—*Berl. Münch. tierärztl. Wschr.* No. 12. pp. 169-173. **118**

An outbreak of husk was observed in a flock of 200 sheep. The third stage larvae of *D. filaria* were not all destroyed on open pastures during the winter from Dec. 1948 to Apr. 1949, even though the temperature fell to −17°C. for a short time. Conditions were therefore favourable for free living third stage larvae, since there were no great temperature variations. The frost period at the beginning of March was accompanied by snow; the warm ground melted the first snow and when the frost came the ground became covered with a thick ice layer. It is assumed that the larvae on the surface of the ground were killed, whilst those attached to plants received some protection and were unaffected by the ice. This is in contrast to the findings of other workers who deny the possibility of the survival of the winter by the larvae. The winter of 1948-49 was very mild and wet with no long frost period. The authors agree that the larvae are usually destroyed in the winter.—M. L. CLARKE.

GIBSON, T. E. (1950.) **Observations on the value of small daily doses of phenothiazine for the control of trichostrongylosis in sheep.**—*J. comp. Path.* **60.** 117-132. [Author's summary copied *verbatim*.] **119**

Three preliminary experiments each involving two pairs of twin lambs, and a confirmatory experiment in each of the two parts of which six pairs of twin lambs were used, were carried out to ascertain the effect of daily one gramme doses of phenothiazine on the rate of acquisition of infestation and on the worm burden of lambs kept at a constant rate of artificial infestation with *Trichostrongylus axei*.

When a daily dose of one gramme of phenothiazine is given to lambs within a few minutes of a dose of infective trichostrongylid larvae the treatment does appear to have some effect in reducing the number of infective larvae which develop to maturity. When there is an interval of several hours between the dose of phenothiazine and the dose of larvae each day, the treatment has no effect on the establishment of the larvae in the host. Daily doses of one gramme of phenothiazine have no effect in reducing the number of mature worms present in sheep. Daily doses of one gramme of phenothiazine do not prevent the development of severe parasitic gastritis in sheep continually exposed to infestation when there is an interval of several hours between the administration of

the phenothiazine and the consumption of the larvae. Daily doses of one gramme of phenothiazine prevent the development of infective trichostrongylid larvae from eggs passed in the faeces of treated sheep. The effect of daily doses of one gramme of phenothiazine on the egg count in treated sheep was not constant. In some experiments no effect was observed, but in others the treated sheep had a lower egg count than the control group.

It is suggested that the good results reported from the field from the use of phenothiazine-salt mixture in the control of parasitic gastritis must be referable to a reduction in the pasture larval count due to the property of small daily doses of phenothiazine of preventing the development of infective larvae from eggs passed in the faeces and not to an actual reduction in worm burden. It is probable, therefore, that good effects will be produced in lambs running with ewes which are kept on phenothiazine-salt treatment, but that adult sheep already infected are unlikely to benefit from such treatment. The efficacy of the treatment may be vitiated if a substantial number of the sheep refuse to take the medicament and the flock should be watched carefully to ascertain whether certain sheep habitually refuse the lick.

LÜTZ. (1948.) Contribution à l'étude des maladies parasitaires internes des bovidés. **[Parasitic diseases in cattle.]**—*Rev. Élev. Méd. vét. Pays. trop.* **2.** 165-174. **120**

L. describes an outbreak of disease in cattle in the Belgian Congo in which, besides alimentary symptoms, there were eye lesions, ulcers on the gums, tongue and palate. Skin lesions were also present, including interdigital eruptions. Abortion was common and many animals died in 3-4 weeks. Numerous P.M. examinations were made and lesions were found in the heart, nasal muscosa, lungs and alimentary canal.

The following nematodes were present :—*Cooperia punctata* and *C. pectinata, Ostertagia circumcincta* and *Haemonchus contortus*, and more rarely *Oesophagostomum columbianum* and *O. radiatum, Trichostrongylus colubriformis, Bunostomum phlebotomum* and an unspecified *Gaigeria* were found. Without any experimental evidence L. attributes the disease to *Cooperia* infestation. He suggests that further study on the life cycle of *Cooperia* might be made to ascertain if larval migration, percutaneous infestation or antenatal infestation occur.—JAS. G. O'SULLIVAN.

ROGERS, W. P. (1949.) **The biological significance of haemoglobin in nematode parasites. II. The properties of the haemoglobins as studied in living parasites.**—*Aust. J. sci. Res. Ser. B.* **2.** 399-407. [Author's summary copied *verbatim.*] **121**

In the parasites examined, the amounts of water-soluble haematin compounds, of which haemoglobin formed the large part, varied considerably ; *Nippostrongylus muris* contained about 6 mg. (as haematin) per g. dry wt. of tissue, *Nematodirus* spp. and *Haemonchus contortus* about 0·8 mg. per g. dry wt. Evidence is presented which indicates that the haemoglobin of *Nippostrongylus muris* may be oxygenated *in vivo*, at least sometimes. The haemoglobin in the living parasites was easily oxygenated and deoxygenated ; when the oxygen tension in the medium surrounding the parasites *in vitro* at 37°C. fell below about 13 mm. of mercury (*Nippostrongylus muris*) or 9 mm. of mercury (*Haemonchus contortus* and *Nematodirus* spp.) the oxyhaemoglobin became deoxygenated.

The rate of oxygen consumption by the three species of parasites was not significantly lessened by poisoning the haemoglobins with low concentrations of carbon monoxide at oxygen tensions between 38 and 5 mm. of mercury.

It is concluded that the haemoglobins, though present in sufficient amounts and apparently having suitable properties, are not actively concerned in the transport of oxygen in the tissues of the parasites *in vivo* when the partial pressure of the oxygen in the medium is above 5 mm. of mercury.

LUKE, D. & GORDON, W. A. M. (1950.) **Sodium fluoride in the pig [Correspondence.]**—*Vet. Rec.* **62.** 234. **122**

American workers using samples of commercial sodium fluoride of 73% purity recommend that the dosage as an anthelmintic should be 1% of the meal fed ; Australian workers using the same grade recommend the use of 0·1-0·15 grammes per lb. body weight. More recently the drug has been available with a purity of 95-98% and illness and death have been reported after its use. The authors recommend a dosage of 0·74% instead of 1% of the meal or 0·074-0·112 grammes per lb. body weight.—E. EDEN.

LARSH, J. E., JR. (1950.) **Relationship in mice of intestinal emptying time and natural resistance to pig ascaris infection.**—*Science.* **111.** 62-63. **123**

The minimal infective dose of *Ascaris lumbricoides* eggs for g. pigs was 6,600 ; mice seemed to be more resistant and the minimal infective dose was as high as 30,000. To test

whether quicker intestinal emptying time was the cause of this difference, emptying time was slowed down by dosing with 1% morphine sulphate. This treatment considerably lowered the minimal infective dose, and *Ascaris* larvae were recovered from the lungs of mice that had received only 12,000 eggs.—E. EDEN.

ERHARDT, A. (1949.) Ein Fall von Darmperforation durch Spulwürmer (*Toxocara cati*) bei der Katze. **[Perforation of the feline intestine as a result of *Toxocara cati* infestation.]**—*Z. Parasitenk.* **14.** 1-2. **124**

A fatal case of perforation of the duodenum by *T. cati* [*T. mystax*] is described in a cat, which had been treated experimentally with an anthelmintic and had expelled 21 *Dipylidium caninum*, one *Taenia taeniaeformis* and 15 *Toxocara cati*. P.M. examination revealed ascites and the presence of 26 ascarids free in the peritoneal cavity, 10 on the omentum, and one which had bored into the pancreas. Four more ascarids were found in the stomach and nine in the intestine.—M. L. CLARKE.

TURK, R. D. (1950.) **Guinea-worm (Dracunculus insignis, Leidy 1858.) infection in a dog.**—*J. Amer. vet. med. Ass.* **117.** 215-216. [Abst. from Author's summary.] **125**

A report of guinea-worm infection in a dog from Texas. The worm had previously been recovered from raccoons in eastern Texas. Because of the possible public health significance, all cases of this infection occurring in dogs should be reported.

PURCHASE, H. S. (1950.) **"Hetrazan" in the treatment of *Dirofilaria immitis* (Leidy 1856).**—*Vet. Rec.* **62.** 34. **126**

Hetrazan (1-diethyl-carbamyl-4-methyl piperazine hydrochloride) was administered to a dog with heart worm, at the rate of 3 mg. per kg. for 14 days followed by 5 mg. for another 21 days. This treatment not only alleviated the clinical condition but also eliminated filaria from the blood.—E. EDEN.

D'ESPOSITO, L. (1949.) Di alcuni casi di infestione del sacco congiuntivale dei bovini da thelazine. **[Thelazia in the conjunctiva of cattle.]**—*Clin. vet., Milan.* **72.** 108-118. **127**

The author described seven cases of *Thelazia* infestation of the conjunctiva of cattle, speaking of the worm as of the Grisoni-Rhodesi type.—B. BALDELLI.

See also absts. 47 (*Fasciola hepatica*); 98 (a fluke, transmitting salmon disease); 260 (trematode egg count); 276 (report, S. Africa); 288 (book, parasitology); 291 (book, *Trichinella* infection).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

COLE, R. K. (1949.) **The egg and avian leucosis.**—*Poult. Sci.* **28.** 31-44. **128**

C. considers that critical evidence has not been produced to show with certainty whether or not the agent of avian leucosis is transmitted *via* the egg ; he summarized the literature for and against the egg transmission concept.

Two strains of poultry resistant to and one strain susceptible to leucosis have been established over a period of 11 years at the Cornell Experimental Station. The mortality among 649 daughters of hens which eventually died from leucosis during the nine months from the start of the breeding season was compared with that among 3,528 daughters from hens which survived through the breeding season.

A similar study was made among 552 daughters by ten sires out of dams which survived. Controls in this case were provided by 38 healthy sires which produced 1,813 daughters from surviving hens.

The deaths from neoplasms in the susceptible line among daughters of breeders which died were fewer than among daughters out of dams which survived, contrary to what might be expected if egg transmission took place.

Among the resistant lines mortality was slightly lower among the controls, but the difference was not considered to be of statistical significance. Similarly among the sires there was little difference in the mortality among the daughters from sires which died of leucosis and that among daughters from surviving sires.

It is considered that while the evidence presented may not be conclusive, it does suggest that transmission of the aetiological agent of leucosis *via* the egg does not play an important part in determining the incidence of the disease in the progeny.—D. LUKE.

SKIPPER, H. E., BELL, M. J. & CHAPMAN, J. B. (1950.) **Studies on the hazard involved in the use of C^{14}. II. The effect of a single dose of C^{14}-labeled sodium bicarbonate on the pattern of deaths from spontaneous leukemia in Akm mice.**—*Cancer Res.* **10.** 362-363. [Authors' summary copied *verbatim.*] **129**

Leukemia-susceptible Akm mice have been injected with carbon 14-labeled sodium bicar-

bonate at the rate of 18 μc. per mouse. This dose has had no significant effect on the pattern of deaths from leukemia in this strain of animals.

PEDERSEN, E. (1950.) **On treatment of spontaneous leukemia in mice with nitrogenized mustard gas.**—*Acta path. microbiol. scand.* **27.** 8-15. [In English.] **130**

Twenty mice with spontaneous leucemia were treated by daily intraperitoneal injections of nitrogenized mustard gas. Although all the animals died, the treatment reduced the number of white blood cells and the amount of tumour tissue in the various organs. Smaller doses and prolonged treatment might produce better results.—E. EDEN.

MUHLBOCK, O. (1950.) **Mammary tumor-agent in the sperm of high-cancer-strain male mice.**—*J. Nat. Cancer Inst.* **10.** 861-864. [Author's summary copied *verbatim.*] **131**

The sperm from the cauda epididymidis of high-cancer-strain male mice (dba Little) contains the mammary tumor-agent.

MORRIS, H. P. (1947.) **Effects on the genesis and growth of tumors associated with vitamin intake.**—*Ann. N.Y. Acad. Sci.* **49.** 119-140. [Abst. in *Chem. Abstr.* **42.** 4255. (1948), slightly modified.] **132**

The growth of spontaneous mammary adenocarcinomas in strain C3H mice was decreased by extreme deficiencies of pantothenic acid and riboflavin produced rapidly during a short period, and was not affected by extreme deficiency of pyridoxine. Rapid thiamine depletion decreased the rate of growth of the spontaneous mammary tumors to the same extent as it led to voluntary restriction in food intake. However, in paired tumor-bearing mice forcibly fed equal quantities of thiamine-deficient or thiamine-supplemented food, the average growth rate of the mammary tumors was depressed in the presence of added thiamine. Feeding pyridoxine, thiamine, or riboflavin in amounts sufficient to maintain the body weight of the adult non-tumor-bearing animal also furnished a sufficient amount of these vitamins to eliminate any effect on the growth rate of the tumors. Riboflavin supplementation increased the number of tumors which developed, regardless of whether the vitamin was given before or after the appearance of the first tumor. Partial riboflavin deficiency depressed the average body weight about 30%, prevented full development of the mammary glands, and reduced the tumor incidence by one third. The possible relation of thiamine to be further investigated to see if an estimation of thiamine deficiency can be a useful criterion in detecting a potential uterine cancer-producing condition.

SUGIURA, K., HITCHINGS, G. H., CAVALIERI, L. F. & STOCK, C. C. (1950.) **The effect of 8-azaguanine on the growth of carcinoma, sarcoma, osteogenic sarcoma, lymphosarcoma and melanoma in animals.**—*Cancer Res.* **10.** 178-185. [Authors' summary copied *verbatim.*] **133**

8-azaguanine (5-amino-7-hydroxy-1*H*-*v*-triazolo [*d*] pyrimidine) had a definite inhibitory effect on the growth of mammary adenocarcinoma EO 771 ; however, it had no complete destructive action upon this tumor.

The inhibition was most apparent when the compound was administered early in the development of the tumor. There was little or no effect on adenocarcinoma EO 771 if treatment was delayed until 6 days after transplantation.

Spontaneous mammary cancers in C3H (Bar Harbor) and in Swiss mice (Rockland Farms) were apparently unaffected by repeated injections of 8-azaguanine.

The use of 8-azaguanine in the treatment of mice bearing Sarcoma 180, sarcoma T241, Harding-Passey melanoma, Wagner osteogenic sarcoma, or Patterson lymphosarcoma, and of rats bearing Flexner-Jobling carcinoma, Sarcoma R39, or Walker carcino-sarcoma 256, produced neither an inhibitory nor a curative effect upon these tumors.

Repeated intraperitoneal injections of 8-azaguanine into C57 black mice bearing adenocarcinoma EO 771 produced extensive gelatinous edema in the subcutaneous tissues and tissues of the thoracic and abdominal walls, and intraperitoneal hemorrhage and ascites. These changes were less pronounced in albino mice and were absent in albino rats.

CARRUTHERS, C. & SUNTZEFF, V. (1950.) **Further evidence for an alteration in the structure of a polarographically reducible substance in carcinogenesis.**—*Cancer Res.* **10.** 339-343. [Authors' summary copied *verbatim.*] **134**

Evidence is presented to confirm the existence of a qualitative chemical change in a substance extractable with alcohol and ether from epidermis undergoing carcinogenesis. Alteration in the structure of the compound is manifested by a difference in the type of polarographic waves and in their half-wave potentials and also by a difference in absorption in the ultraviolet. There is also a dissimilarity between muscle and muscle tumor in that the

purified substance from the latter absorbs at 250 mμ while that of the former does not. On the other hand, the substance from normal liver and hepatoma appears quite similar with respect to the half-wave potentials and absorption in the ultraviolet. A method for the preparation of these reducible substances from various tissues is described, and some of the properties of the highly purified substances are given. Present data indicate that these substances belong to one class of compounds.

TAYLOR, E. S., PALLAS, W. C., WIKLE, W. T., MCCALLIN, P. F. & GOODMAN, S. N. (1950.) **The effect of methylcholanthrene on the genital tracts of rabbits and dogs as revealed by biopsies and exfoliative cytology.**—*Cancer Res.* **10.** 360-361. [Authors' summary and conclusions copied *verbatim.*] **135**

An unsuccessful attempt was made to induce malignant tumors by methylcholanthrene in the cervices and vaginas of rabbits and dogs. The vaginas of rabbits were exposed to the carcinogen for as long as 76 weeks. The uterine cervices of the dogs were exposed to the same substances for as long as 190 weeks. Apparently, the genital tracts of these animals are very resistant to methylcholanthrene. Since no tumors were produced, it was impossible to study the histogenetic evolution of artificially produced tumors.

EARLE, W. R., SCHILLING, E. L. & SHELTON, E. (1950.) **Production of malignancy *in vitro*. IX. Description of cells at the fluid interface of the culture.**—*J. Nat. Cancer Inst.* **10.** 865-881. [Authors' summary copied *verbatim.*] **136**

The description of the cell design in the 6 sarcomatous cell strains previously described as having been originated from one strain of mouse subcutaneous connective issue is continued. Attention is directed to characterization of cells lying in the plasma clot directly adjacent to the fluid culture medium.

In control strains D, never deliberately treated with carcinogen, and in strains H and J, treated for 6 and 32 days respectively with 20-methylcholanthrene, the cells at this fluid interface were generally radially oriented relative to the explant, loosely arranged, and except at the extreme culture periphery, extremely uniform in size. Strain L treated 111 days, however, showed numerous abnormally large cells; strain N treated 184 days, showed a characteristic lateral rounding of the cells; while strain O, treated 406 days, showed cells that were very granular and badly shrunken laterally.

Detailed study of the cell design at the fluid interface was begun only after the cell design at the glass interface was well developed. Within the period studied there was no evidence of continued progressive change in the morphology of the cells at the fluid interface, nor was there any evidence of reversion to a less altered type in any strain.

NUTRITIONAL AND METABOLIC DISORDERS

BALCH, H. H. (1950.) **Relation of nutritional deficiency in man to antibody production.**—*J. Immunol.* **64.** 397-410. [Author's summary copied *verbatim.*] **137**

The amount of circulating antitoxin produced by 25 Schick negative nutritionally depleted patients and 19 Schick negative well-nourished adults following a single intramuscular injection of purified diphtheria toxoid has been measured quantitatively.

Severely ill, nutritionally depleted patients were found capable of producing antibody as well as, or better than the healthy controls. Furthermore, antibody production was found to continue up to the time of death from wasting disease.

No relation was found to exist between antibody response, the age of the patient, the initial antibody level, total serum protein, serum albumin or serum globulin levels.

No relation was found between antibody response and the development of infection.

GELL, P. G. H. (1949.) **Food and resistance to disease.**—*J. R. Inst. publ. Hlth.* **12.** 118-125. **138**

A lecture in which the effect of starvation on disease resistance in human populations was discussed. Vaccine injection into underfed human subjects caused diminished but still measurable antibody formation.

—P. H. HERBERT.

MCCLYMONT, G. L. (1950.) **The relation of the type and quantity of roughage and grazing to the fat content of milk.**—*Aust. vet. J.* **26.** 111-121. **139**

Field observations in New South Wales have shown a depression of the fat content of milk from cows which were fed mainly on concentrates with only limited amounts of roughage. The condition occurred when the roughage intake was limited to grazing on short lush pasture, green oats or practically bare or unpalatable pastures. It was also observed in

cows fed mainly by grazing on young lucerne.

The fat content of milk was depressed experimentally by as much as 40% when cows were fed on concentrates and grazed on succulent pasture or green oats.

In all instances the feeding of coarse roughage prevented or corrected low butter fat percentages.

Relevant literature is reviewed and other factors associated with this type of disturbance are discussed.—R. L. Reid.

Pounden, W. D., Ferguson, L. C. & Hibbs, J. W. (1950.) **The digestion of rumen microorganisms by the host animals.**—*J. Dairy Sci.* 33. 565-572. [Authors' summary copied *verbatim.*] 140

Observations were conducted on samples from various parts of the digestive tract of cattle for the presence of four types of bacteria characteristically present in rumen samples from cattle. Evidence was being sought regarding the availability of bacterial products to the host.

The first of the four organisms were larger coccoids. Some of them were observed in all parts of the digestive tract, although sometimes apparently in less concentration in the more posterior parts of the large intestine. The second, which were large cigar-shaped organisms, disappeared in the abomasum and were missing in the remainder of the tract. On addition to samples of the contents of the abomasum and small intestines, they were destroyed but not so by those samples from the large intestine.

The third type was composed of small rods which formed in flat rectangular groups. These appeared to disintegrate gradually as they reached the posterior parts of the tract, although some were observed in samples from the caecum and colon. The same apparently was true of the bacteria of the fourth group, which were thick square-ended rods.

The destruction of protozoa by abomasal fluids, reported by others, was confirmed in this study.

It is concluded from the data, although somewhat limited, that the ultimate fate of rumen microorganisms varies between the extremes of complete destruction in the abomasum to passage entirely through the digestive tract of the host.

Conrad, H. R., Hibbs, J. W., Pounden, W. D. & Sutton, T. S. (1950.) **The effect of rumen inoculations on the digestibility of roughages in young dairy calves.**—*J. Dairy Sci.* 33. 585-592. [Authors' summary and conclusions slightly modified.] 141

A series of balance trials were conducted to determine if calves inoculated with cud material from older cattle and fed rations high in roughage would be able to digest dry matter, cellulose and protein more efficiently than would calves similarly fed but uninoculated. Five inoculated and five uninoculated Jersey calves first were fed for 14 days on a ration of limited whole milk and alfalfa *ad libitum.* During this period, the calves which were inoculated digested a statistically significant higher percentage of the cellulose and dry matter ingested than the calves which were uninoculated. However, this appreciable difference in digestibility between inoculated and uninoculated calves disappeared when some of these calves were later placed on rations of either alfalfa hay or grass clippings only. No statistically significant differences were noted in the apparent digestibility of protein between inoculated and uninoculated calves on any of the rations used. The small, though consistent, difference in protein digestibility of approximately 2 per cent in favor of the inoculated group in each series of trials may be attributed to the digestion of protozoa protoplasm. A calf freed of all or almost all of the characteristic indicator rumen microorganisms by heavy grain feeding, when placed on a ration of alfalfa hay, showed a marked decrease in digestibility of cellulose in comparison with a similarly treated calf in which the characteristic rumen microorganisms reappeared, possibly as a result of natural reinoculation.

These results are interpreted to mean that when roughage constitutes the entire dry feed, cud inoculations aided in providing microorganisms which digested cellulose somewhat more efficiently than did microorganisms which became established in the uninoculated calves. The inoculations were observed to stimulate hay consumption at an earlier age then when no inoculations were given.

Anderson, G. C. & Hogan, A. G. (1950.) **Adequacy of synthetic diets for growth and reproduction of swine.**—*J. Anim. Sci.* 9. 163-169. [Authors' summary copied *verbatim.*] 142

When pigs are reared on a synthetic ration the rate of growth is accelerated by the administration of an antipernicious anemia liver fraction. Pigs grow much more rapidly on fortified cow's milk than they do on a synthetic ration even when the antipernicious anemia fraction is administered.

Of two sows that had been reared on a synthetic ration, one was unable to conceive. The other bore a litter but most of the pigs

were deformed and all were dead by the end of the third week.

GOLDMAN, J. (1950.) **Effect of cholesterol feeding in hamsters.**—*Arch. Path.* **49.** 169-172. [Author's summary copied *verbatim.*] **143**

Hamsters were fed cholesterol for periods of from thirty to one hundred and thirty days under proper control. Blood cholesterol elevation, steatosis of the liver and the adrenal glands and testicular atrophy were observed in hamsters fed cholesterol. In no animal did any appreciable degree of atheromatosis develop in the course of the experiment. The Gold Syrian hamster seems ill suited for the experimental attempt to produce atheromatosis by the feeding of cholesterol.

RUMBALL, P. & MILNE, F. N. J. (1949.) **Poultry nutrition : principles and practice.**—*Qd. agric. J.* **68.** 353-363 ; **69.** 26-38, 111-120, 175-184. **144**

The authors summarize the nutritional principles and practices of poultry feeding. There are also short sections on the feeding of ducks, turkeys and geese. The nutritional attributes of foodstuffs available in Queensland and a poultryman's calendar for growing green feed are included. The purpose of a poultry ration, composition of poultry rations in respect of protein, carbohydrate, fat, minerals including trace elements, and vitamins, palatability and digestibility are discussed. Methods of feeding, food requirements, advice in formulating rations, rations for chickens, laying hens and fattening birds are dealt with and a section is also included on the construction of feed hoppers.—M. C. FRANKLIN.

BURROUGHS, W., GALL, L. S., GERLAUGH, P. & BETHKE, R. M. (1950.) **The influence of casein upon roughage digestion in cattle with rumen bacteriological studies.**—*J. Anim. Sci.* **9.** 214-220. [Authors' summary copied *verbatim.*] **145**

Various additions of casein to a low-protein cattle ration containing roughage and corn [maize] starch resulted in increased dry matter digestibility of the roughage part of the ration.

Rumen bacteriological studies with and without the casein additions revealed differences which correlated closely with the degree of roughage digestion. These studies included counts of the rumen bacterial populations, Gram stain morphology observations, and cultural work pertaining to the physiology of the rumen bacteria present.

The results offer further evidence of the need for a minimum protein requirement for efficient roughage digestion in cattle, especially when starch or starchy grains make up a part of the ration. This minimum protein requirement is interpreted as representing a protein (nitrogen) requirement for the growth of rumen micro-organisms directly involved in roughage digestion.

ADAMSTONE, F. B. & SPECTOR, H. (1950.) **Tryptophan deficiency in the rat. Histologic changes induced by forced feeding of an acid-hydrolyzed casein diet.**—*Arch. Path.* **49.** 173-184. [Abst. from authors' summary.] **146**

Tryptophan deficiency induced in the rat by forced feeding of a purified tryptophan-deficient ration produces a series of pathologic alterations including heavy accumulation of fat in the liver, degeneration of the seminiferous tubules, atrophy and degeneration of visceral and cardiac muscle, keratinization of the cornea and injury of epithelial tissues.

DUNLOP, G. (1948.) **Anoestrus in grazing animals due to nutritional causes.**—*1st Intern. Congr. Physiol. Path. Anim. Repr. Art. Insem.* pp. 4. **147**

Reproductive rate of cattle and sheep is frequently low in parts of Scotland where phosphorus is grossly deficient Feeding of mineral supplements (high phosphate + trace elements) increases the calf crop from 60% to 90%. Cobalt given to ewes before mating stimulates oestrus and decreases the number of barren animals. A further supplement given before lambing increases the lamb crop usually to more than 90%.—P. H. HERBERT.

CURRAN, S. (1949.) **Investigation into aphosphorosis and grassland conditions in the midlands of Ireland.**—*J. Dep. Agric. Eire.* **46.** pp. 60-85. **148**

Of the ten counties surveyed Laoighis, Kildare and Offaly are worst affected. Aphosphorosis is also common in Galway, Roscommon, Sligo and N. Tipperary. Cattle respond well to phosphate supplements and pasture fertilizing. Emphasis is laid on losses due, not only to death, but also to unthriftiness, temporary sterility and susceptibility to other diseases. —P. H. HERBERT.

SHEEHY, E. J. (1949.) **Mineral deficiency in pasture herbage affects animal health and productivity.**—*J. Dep. Agric. Eire.* **46.** pp. 5-15. **149**

The occurence and treatment of deficiencies were reviewed. Attention was drawn to the

importance of unrecognized and possibly widespread phosphorus deficiency.

—P. H. HERBERT.

HUNTER, W. M. D., MCCARROLL, P. J. & O'MOORE, L. B. (1950.) **Cobalt therapy in clinical bovine ketosis.**—*Irish Vet. J.* **4.** 42-44. **150**

Seven cases of bovine ketosis were fed supplements of cobalt sulphate. The authors considered that the clinical improvement obtained was not caused by a direct anti-ketogenic property of the cobalt, but that it increased appetite and rumination.—E. EDEN.

SMITH, S. E., BECKER, D. E., LOOSLI, J. K. & BEESON, K. C. (1950.) **Cobalt deficiency in New York State.**—*J. Anim. Sci.* **9.** 221-230. [Authors' summary and conclusions slightly modified.] **151**

Feeding trials with lambs have clearly shown that New York State contains areas that are deficient in cobalt.

Lambs fed a low-cobalt ration developed a deficiency of this element in 4-7 months characterized by loss of appetite, loss of weight, a simple anemia and death. Cobalt salts given to cobalt-deficient lambs by mouth resulted in a return of appetite within about a week. This was quickly followed by increased weight gains. Hemoglobin levels started to rise sometime later, about six weeks. Cobalt salts injected into cobalt-deficient lambs were completely ineffective in altering the course of the deficiency.

As compared to cobalt-fed lambs, cobalt-deficient lambs showed a slightly lower concentration of blood plasma proteins ; a slightly lower blood plasma alkaline phosphatase activity and about the same blood plasma inorganic phosphorus concentration.

Autopsy and microscopic tissue studies showed that cobalt-deficient lambs had fatty degeneration of the liver and a marked hemosiderosis of the spleen.

A chemical survey of forage plants in the State has given some estimate of the extent of cobalt-deficient areas.

GRUMMER, R. H., BENTLEY, O. G., PHILLIPS, P. H. & BOHSTEDT, G. (1950.) **The role of manganese in growth, reproduction, and lactation of swine.**—*J. Anim. Sci.* **9.** 170-175. [Authors' summary copied *verbatim.*] **152**

A ration of corn, soybean oil meal, gluten meal, and alfalfa, containing about 12 ppm. of Mn, was improved for pigs on concrete by supplementing additional manganese. However, the performance was not improved when the total manganese content exceeded 55 ppm. Growing hogs did not tolerate a high level of manganese (500 ppm.). The specific manganese requirement of growing pigs is still an unknown quantity. Costly synthetic diets will perhaps be necessary for such a determination.

BUCHANAN, M. L., KLOSTERMAN, E., BOLIN, D. W. & FORD, K. (1949.) **Vitamin A in beef cattle.**—*Rep. N. Dak. agric. Exp. Sta.* No. 356. p. 49. **153**

When Hereford cows were kept on a ration low in carotene, no impaired growth or loss of condition was observed. Supplementation of the diet with carotene did not improve production, but increased the carotene level of the blood substantially and also raised the vitamin A level. It is suggested that vitamin A deficiency when it occurs under western North Dakota conditions is likely to be complicated by other unfavourable factors.—E. EDEN.

KLOSTERMAN, E. W. & LIGHT, M. (1949.) **Conversion of carotene in sheep.**—*Rep. N. Dak. agric. Exp. Sta.* No. 356. pp. 49-51. **154.**

Intravenous injections of carotene did not cure vitamin A deficiency in lambs. Other experiments reported confirmed the hypothesis that carotene is not converted to vitamin A in the liver but in the intestinal wall.—E. EDEN.

MANNING, W. K. (1950.) **Biotin deficiency as the causative agent of induced cryptorchidism in albino rats.**—*Science.* **112.** 89. **155**

Earlier observations on cryptorchidism in rats induced by egg-white diets was confirmed. After 90 days on the diet, withdrawal of the testes to the abdominal position was observed in all of 30 adult rats.—P. H. HERBERT.

WHITEHAIR, C. K., SCHAEFER, A. E. & ELVEHJEM, C. A. (1949.) **Nutritional deficiencies in mink with special reference to hemorrhagic gastroenteritis, "yellow fat," and anemia.**—*J. Amer. vet. med. Ass.* **115.** 54-58. **156**

Mink placed on a diet of known composition, developed, after two months, a condition similar to the naturally occurring disease. Anaemia and other symptoms improved rapidly when folic acid supplements were given, but some months later a deficiency condition again developed. This did not respond to increased folic acid or to any other known vitamin. It was cured by feeding fresh liver or whole milk.

—P. H. HERBERT.

MEESER, M. J. M. (1950.) **An acute nutritional deficiency of equines. [Correspondence.]**—*J. S. Afr. vet. med. Ass.* **21.** 81-82. **157**

A non-infectious disease affecting horses in Cape Province is described. It is characterized by muscular incoordination and weakness, and is believed to be due to a nutritional deficiency.
—P. H. HERBERT.

GALLINA, L. (1950.) Nuovi orientamenti nell'interpretazione dell'eziologia e della terapia del collasso puerperale nella vacca. **[Aetiology and therapy of milk fever.]**—*Zootec. Vet., Milan.* **5.** 194-199. **158**

Puerperal collapse may be due to many causes ; simple hypocalcaemia due to excessive consumption of calcium during pregnancy and lactation ; hypoparathyroidism due to fatigue of the parathyroids during pregnancy ; avitaminosis D or C, or both ; slight hyperparathyroidism associated with hypophosphataemia ; hypoadrenalism, commonest in first calvers . hypoglycaemia ; acetonaemia ; hypomagnesaemia ; and simple anaemia. Intravenous injections of Ca and Mg compounded with glucose and vitamins C and D are suitable for all cases and dispense with the necessity of accurate diagnosis. G. appeals for a suitable compound to be prepared by the veterinary pharmaceutical factories.—R. MACGREGOR.

See also absts. **213** (sulphonamides and aneurin); **282** (book, nutrition).

DISEASES, GENERAL

FREI, W. (1949.) Zur Pathologie der Misch- und Sekundärinfektionen. **[Mixed and secondary infections.]**—*Schweiz. Arch. Tierheilk.* **91.** 143-186. **159**

This is a survey of the pathology of mixed and secondary infections in domestic animals.

F. defines terms and gives a detailed table of the various associations of pathogenic micro-organisms, especially those between viruses and bacteria. He discusses the relative pathogenicity of the micro-organisms involved in both of these types of infection, the constancy of typical combinations, the order of their entry and the onset of the respective symptoms.

The conditions encountered by the secondary agent as the direct result of general and local changes brought about in the affected organism by the primary agent are of importance. When dealing with local conditions, F. considers (a) the receptivity of inflamed tissues, and (b) the direct reciprocal affinity between two types of organism (relative production and consumption of growth factors).

He concludes with discussions on the resuscitation of a latent primary infection by supervening secondary agents, and possible antagonism between agents involved in these infections.—G. P. MARSHALL.

ROLLE, M. (1950.) Die nicht ansteckenden Jungtierkrankheiten. **[Non-infectious diseases of young animals.]**—*Tierärztl. Umsch.* **5.** 273-276. **160**

R. considers the intestinal flora to be the main factor concerned in the health of young animals. Illness results when it is disturbed, as, for instance, by *Bact. aerogenes*, which is antagonistic to *Bact. coli*. When large numbers of *Bact. coli* are destroyed, enteritis is likely to develop. Treatment with brewer's yeast (100 g. daily) helps to re-establish a normal flora.
—ROY MACK.

LOVELL, R. (1949.) **Aetiological aspect of diseases of young dairy stock.**—*Proc. XIIth Internat. Dairy Congr., Stockholm.* Sect. I & VI. 584-588. [In English : French summary.] **161**

Over 5·5% of all calves born die before they are six months of age. Much of this mortality results from infections by such organisms as *Bacterium coli* or *Corynebacterium pyogenes*. But as the presence of these bacteria does not always cause death, the importance of contributory factors is pointed out and their study advocated.—E. EDEN.

ZARGAR, S. L. (1950.) **Major contagious cattle diseases in India.**—*J. Amer. vet. med. Ass.* **116.** 271-274. **162**

A general note, with statements on the extent of incidence and monetary values of losses.—R. MACGREGOR.

HESS, E. & BRUNNER, J. (1949.) Untersuchungen über verschiedene Abortusursachen beim Rind. **[Research on the various causes of abortion in cattle.]**—*Schweiz. Arch. Tierheilk.* **91.** 285-291. [French summary.] **163**

During the period 1939-48 some 14,000 specimens from cases of abortion in cattle were examined at the veterinary bacteriological institute in Zürich. Of 9,261 cases for which sufficient data were available 2,973 were diagnosed as caused by Brucella abortus (examina-

tion of smears stained with alkaline safranine), 840 by trichomoniasis, 245 by *C. pyogenes* and 48 by streptococci. 4,106 cases were therefore diagnosed as infective in origin, leaving 5,155 (55·7%) classed as non-infective. It is agreed that some cases of trichomoniasis and also a few cases of brucella abortion may have been missed because of the unsuitability of the material.

The infective and non-infective groups are shown in two similar graphs which illustrate the distribution of cases at two-week intervals throughout pregnancy and show an initial peak at the 8th-13th weeks and a second much higher peak which begins at 22 weeks and reaches its maximum at 30-35 weeks. The first peak occurs at the time of implantation and the beginning of the second rise coincides with the regression of the corpus luteum and the transfer of endocrine control to the placenta. It is suggested that the non-infective cases are associated with a functional defect of the reproductive system and that the similarity of the two graphs suggests that this factor also plays a part in the infective cases. A third graph shows that the two peaks are caused in the infective group by trichomoniasis and *Br. abortus*, respectively.

—E. G. White.

Sigurdsson, B. & Palsson, P. A. (1949.) **A disease of Icelandic cattle characterised by sudden death.**—*J. comp. Path.* **59.** 168-175. **164**

The disease is most prevalent from March to July. No symptoms are observed prior to death, and no macroscopic lesions are found on P.M. examination. Microscopic renal haemorrhages and intraglomerular exudation are present. The aetiology is unknown.

—Roy Mack.

Margolis, G., Forbus, W. D., Kerby, G. P. & Lide, T. N. (1947.) **Glomerulonephritis occurring in experimental brucellosis in dogs,** —*Amer. J. Path.* 23. 983-993. **165**

The lesions in the kidneys of four of nine dogs injected with *Br. suis* are described. Dog 1 was given 21 repeated intravenous injections of the Brody strain (recovered at autopsy from a case of Hodgkin's disease, and of slight virulence for g. pigs) at about weekly intervals, and died when severely ill on the 198th day of the experiment ; dog 4 received 28 injections, and died after severe illness on the 261st day. Positive blood cultures were obtained during life, and after death *Br. suis* was recovered from the spleen, the liver and the kidneys of each animal, from the lymph nodes of dog 1, and the testis of dog 4. In these dogs, there were active inflammatory lesions in the glomeruli, superimposed on chronic glomerular scarring. It is suggested that these lesions were probably produced by repeated sublethal injuries to the glomeruli.

Dog 2 was given 35 intravenous injections of the Brody strain over a period of 37 weeks and became severely ill. The injections were discontinued and clinical recovery followed. The animal was killed on the 487th day. Positive blood cultures were obtained during life (the last, 233 days before death) and P.M. *Br. suis* was recovered from the kidneys and the lymph nodes. Dog 3 was given 39 intraperitoneal injections in a period of 45 weeks, but no clinical illness developed. The animal was killed on the 461st day of the experiment, 143 days after the last injection. Four only of 41 blood cultures during life were positive, and *Br. suis* was not isolated after death. In dogs 2 and 3, there was what appeared to be a progressive renal lesion of an active subacute glomerulonephritis, the lesion being somewhat similar in structure to that found in acute and subacute glomerulonephritis in man.

—E. Cotchin.

Stubbs, E. L. (1950.) **Chinchillas and their diseases.**—*Vet. Ext. Quart. Univ. Pa.* No. 117. pp. 39-45. **166**

Attempts are being made to rear chinchillas in view of the high value of their fur. Their natural life and methods of rearing them in captivity are described.

In the not numerous observations S. has made on chinchilla diseases, enteritis has been a common feature found P.M. Salmonella organisms have been isolated from diseased chinchillas, also pasteurella organisms, streptococci and staphylococci ; S. suggests that most of the organisms found were secondary invaders. *Giardia*, *Trichomonas* and *Balantidium* have caused disease. S. emphasizes that little is known of the diseases of these animals.

—Roy Mack.

White, A. G. & Sachs, B. A. (1950.) **Studies in edema : cholesterol and its relation to protein nitrogen in edema fluid.**—*Science.* 112. 18-19. **167**

In 16 cases of oedema resulting from congestive heart failure or venous or lymphatic obstruction in human patients, the total cholesterol and protein nitrogen was calculated in the serum and oedema fluid. In cases with lymphatic obstruction the cholesterol content of the oedema fluid averaged 175·2 mg.%, whereas in congestive heart failure the average cholesterol content was 14·6 mg.%.—D. Luke.

GRUENWALD, P. & MAYBERGER, H. W. (1950.) **Hydrops of the fetus: a manifestation of shock.**—*Amer. J. med. Sci.* **220.** 12-16. [Authors' conclusions copied *verbatim.*] **168**

The present experiments, in which a standard method for the experimental production of shock was adapted for guinea pig fetuses, suggest that hydrops of the fetus is a manifestation of shock. The presumptive mechanism is discussed.

It is assumed that in man fetal shock, caused by isoimmunization of the mother and leading to hydrops or to less conspicuous edema is most commonly due to a reaction similar to anaphylactic shock. Other instances are probably due to various other agents producing shock, among them anoxia. This does not exclude the existence of a third group in which factors unrelated to shock, *e.g.*, malformations of the circulatory system, produce hydrops.

Suggestions for the treatment of edema of the newborn, and perhaps hydrops are made on the basis of the present hypothesis.

POPPER, H. & FRANKLIN, M. (1948.) **Diagnosis of hepatitis by histologic and functional laboratory methods.**—*J. Amer. med. Ass.* **137.** 230-234. [Authors' summary copied *verbatim.*] **169**

With the help of liver biopsies, the attempt has been made to divide acute hepatitis into a primary (medical) form and a secondary (surgical) form. The former is further sub-divided into virus (infectious) and toxic varieties. The secondary form is subdivided into a biliary (due to extrahepatic obstruction) and a purulent type (due to inflammation in the portal triads). This differentiation is based on pathological findings on biopsy specimens, and is correlated with the laboratory findings in the different groups. This classification of hepatitis into four groups helps in the differential diagnosis of jaundice by laboratory methods, especially distinguishing surgical from medical types of jaundice. The diagnosis of intrahepatic biliary obstruction in medical jaundice and its differentiation from extra-hepatic biliary obstruction and the recognition of secondary damage to the liver in extra-hepatic jaundice are especially facilitated through this approach.

KUBE. (1950.) Noch einmal über Deckinfektionen und den Versuch einer Bekämpfung in der ländlichen Praxis. **[Control of venereal diseases.]**—*Berl. Münch. tierärztl. Wschr.* No. 7. pp. 132-135. **170**

Report by a practitioner of results obtained in the control of venereal diseases of cattle by current methods.—ROY MACK.

KING, J. D. (1949.) **Histological observations on parodontal disease in the golden hamster (*Cricetus auratus*): calculus, food particles and other foreign bodies as aetiological factors.**—*J. Path. Bact.* **61.** 413-425. **171**

All of 30 laboratory hamsters maintained on nutritionally adequate rations succumbed to parodontal disease. The disease began with the deposition of salivary calculus on the crowns of the molar teeth nearest the orifices of the salivary ducts. Laceration of the adjacent gum margin, with pocket formation, soon followed. Rapid deepening of these parodontal pockets facilitated further deposition of calculus. When the diet was finely comminuted, food débris might be packed into the pockets, while in other cases, coarse or sharp food particles might become impacted in the gum tissues of the pocket walls, as might sawdust particles and wood shavings used as bedding. The interdental impaction of food and other débris was an active factor in the spread of the disease from the originally-affected areas to proximal and lingual or labial surfaces, becoming increasingly important as the salivary duct orifices became more remote. The inflammatory process extended beyond the amelo-cement junction, to involve the periodontal membrane, the alveolar bone, and the roots of the teeth. Tilting of the teeth, cavitation of the roots sometimes simulating dental caries, and finally exfoliation of the teeth, might follow.

—E. COTCHIN.

See also absts. 24 (*Corynebact. ovis* and arthritis in lambs); 98 (salmon disease); 280 (book, clinical pathology).

POISONS AND POISONING

MUNCH, J. C. (1949.) **Toxicology in canine practice.**—*Proc. 18th Ann. Conf. Veterinarians, Ohio.* pp. 110-113. **172**

The toxic doses of various rodent and other poisons, when fed orally to dogs, are tabulated. The use of appropriate antidotes is also discussed.—E. EDEN.

BLAXTER, K. L. & ALLCROFT, R. (1950.) **Lead as a nutritional hazard to farm animals. I. The determination of lead in biological material.**—*J. comp. Path.* **60.** 133-139. **173**

BLAXTER, K. L. (1950.) **Lead as a nutritional hazard to farm livestock. II. The absorp-**

tion and excretion of lead by sheep and rabbits.—*Ibid.* 140-159. [Authors' summaries slightly modified.] **174**

I. A rapid general method for the determination of lead in biological materials is described, in which almost the entire operation is carried out in an 8 in. by 1 in. pyrex test-tube. Minor modifications are given for urine and for materials, such as bone, rich in calcium phosphate.

II. Experiments with sheep are described in which the faecal and urinary excretion of lead has been determined. It is shown that the excretion of lead in the faeces consisted largely of unabsorbed food lead, and that within the range of intake of 2 mg. to 40 g. of lead, absorption was very small. The faecal lead was largely excreted as phosphate or sulphide. The urinary excretion of lead is dependent on lead intake, but even when large quantities were given did not exceed 0·8 mg. daily. On low intakes (2 mg.) the urinary lead excretion was of the same order of magnitude as the excretion reported in the normal human being.

Lead was excreted in the milk of the ewe in relatively large quantities when the animal had been given lead in its diet. The bile is the major channel of lead excretion when large quantities are given, and the colon and wall of the intestine are of very little importance in excreting lead which has gained access to the body. When less than 3 mg. of lead are ingested daily by the sheep there is no retention of lead. Above this quantity lead is retained in increasing quantities by the tissues. These results differ markedly from those on mice, rats, and humans. The avidity of the tissues in retaining lead was shown by the fact that when lead was injected into the systemic circulation, only 4 to 10 per cent. of the amount injected was recovered over a period of six days following the injection.

BROWN, D. J. (1949.) **Laboratory investigation of lead poisoning in cattle.**—*Analyst.* **74.** 602-603. **175**

Clinical signs and P.M. findings in cattle with lead poisoning are described. A method, using dithizone, for the estimation of lead in tissues and intestinal contents and its application to 12 animals is also given. In the animals examined, considerable amounts of lead were found in the intestinal contents and generally the concentration of lead in the kidney was higher than in the liver. Hence it is suggested that the levels in the kidneys might be used for diagnostic purpose.—E. EDEN.

BASTRUP-MADSEN, P. (1950.) **Dimercaprol in acute lead poisoning.**—*Lancet.* **259.** 171-172. [Author's summary copied *verbatim.*] **176**

Two patients with acute lead poisoning following ingestion of litharge were treated with dimercaprol [British anti-lewisite.—Ed. *V.B.*]. In both cases the amount of lead excreted in the urine was considerably increased immediately after the institution of dimercaprol therapy. The mobilisation of lead did not seem to aggravate the symptoms of intoxication.

WHITE, E. G. & COTCHIN, E. (1948.) **Natural and experimental cases of poisoning of calves by flaking lead paint.**—*Vet. J.* **104.** 75-91. **177**

Calves were given single or repeated doses of lead paint, lead carbonate or lead acetate. The signs of poisoning and the concentration of lead in the tissues were similar irrespective of the form of lead given ; since the paints used contained no other constituent likely to be dangerous, it was concluded that the harmful effect produced by the ingestion of flakes of lead paint is actually caused by lead.

The nervous symptoms varied, but included fits and blindness and once the animals were affected they rarely recovered. Degeneration of the kidneys was also observed. Flakes of lead paint could be detected in the stomach. Concentration of lead in the liver varied from 9·5 to 182 p.p.m. and in the kidney from 0·5 to 300 p.p.m. Magnesium sulphate is recommended as an antidote for lead poisoning.—E. EDEN.

FELS, I. G. & CHELDELIN, V. H. (1948.) **Methionine in selenium poisoning.**—*J. biol. Chem.* **176.** 819-828. **178**

Addition of methionine reversed the inhibition of yeast growth caused by selenate, no other compound tested displaying this reversal. Yeast was unable to utilize D.L. homocystine plus a methyl donor such as choline to reverse the inhibition, suggesting that methionine is synthesized in a manner different from that in mammalian tissue. Of the optical isomers of methionine only the naturally occuring L isomer was capable of reversing the inhibition by selenate.—H. PAVER.

BELFORD, J. & BONNYCASTLE, D. D. (1950.) **The effect of some anticonvulsant agents upon agene-induced convulsions in dogs.** *J. Pharmocol.* **99.** 325-328. [Authors' summary copied *verbatim.*] **179**

Without producing signs of toxicity phenobarbital can prevent the occurrence of convulsions in dogs receiving agenized-zein at a dosage

level which is capable of inducing convulsions in 100 per cent. of control animals. There is a suggestion that diphenylhydantoin has a positive synergistic action with the convulsive action of agene-treated zein. Trimethadione protects animals from agene-induced convulsions, but only at levels which result in toxic effects. On the other hand, Paradione affords some protection against convulsions without the development of such signs. The experimental design was not satisfactory for the demonstration of quantitative differences between the anticonvulsant agents studied, but did reveal some qualitative differences.

GREER, F. G. & BANKS, P. N. (1950.) **Toxicity following the daily use of phenamidine (M. & B.) in the dog.**—*Vet. Rec.* **62.** 60. **180**

In treatment of demodectic mange the normal dose recommended for phenamidine is 0·3 ml. per kg. injected on six occasions at intervals of 3-4 days. In the two cases reported, it was decided to increase this dose to 0·3 ml. per kg. *per diem* in order to overcome any demodectic mites that might have become drug fast. The dogs developed muscular weakness, clonic convulsions, constriction of the pupils, retention of urine, severe congestion of mucosae and died.—E. EDEN.

INNES, J. R. M. (1950.) **Renal cortical necrosis and other lesions in sheep (with and without ligation of pancreatic duct) produced by alloxan poisoning.**—*J. comp. Path.* **60.** 1-9. **181**

Pancreatic sclerosis subsequent to the ligation of the pancreatic duct did not prevent the diabetogenic action of alloxan in sheep. On the whole this species was more susceptible to the general toxic effects of this drug when compared with the effects on other species *e.g.* dogs or rabbits; severe renal cortical necrosis (probably caused by some violent cardio-vascular upset) developed and death ensued.—E. EDEN.

PARKER, J. R. (1949.) **Toxaphene applications to alfalfa for the study of residues and their effects on livestock.**—*Bull. Mont. agric. Exp. Sta.* No. 461. pp. 3-4. **182**

Toxaphene (a chlorinated camphene) was applied to alfalfa at the rates of 1, 2, 4, or 8 lb. per acre in the form of an emulsion with water, a solution in paraffin, a wettable powder suspension or a dust, as practised for grasshopper control. The crops were cut on the experimental plots and either sampled green or hay was made and samples taken after baling and storing. [See also absts **183-185.**]
—R. MARSHALL.

LAAKSO, J. W. & JOHNSON, L. H. (1949.) **Toxaphene residues on alfalfa.**—*Bull. Mont. agric. Exp. Sta.* No. 461. pp. 5-15. **183**

The percentage deposition of toxaphene was greatest when a water emulsion was used for spraying and least when the insecticide was used as a dust ; it was most persistent when applied as an oil solution. Loss of toxaphene after the crop was baled and stored was less than while it was still standing.—R. MARSHALL.

MARSH, H. (1949.) **Experimental feeding of toxaphene-treated alfalfa to cattle and sheep.**—*Bull. Mont. agric. Exp. Sta.* No. 461. pp. 16-21. **184**

Of 14 yearling steers and 14 ewe lambs fed upon hay from the toxaphene-treated plots, none had any indication of toxic effects except two steers ; these had consumed hay from a plot sprayed at the 8 lb. per acre level and they developed transitory nervous symptoms.
—R. MARSHALL.

DIEPHUIS, F. & DUNN, C. L. (1949.) **Toxaphene in tissues of cattle and sheep fed toxaphene-treated alfalfa.**—*Bull. Mont. agric. Exp. Sta.* No. 461. pp. 22-26. **185**

The fatty tissues of steers fed for four months upon toxaphene-treated hay contained more toxaphene (estimated as organic chloride) than the commercial meat cuts. When the recommended spraying rate of 1-2 lb. per acre was used, up to 300 p.p.m. of toxaphene was found in fatty tissue while less than 7 p.p.m. was found in lean meat. Most of the toxaphene was eliminated by the eleventh week after feeding with treated hay had ceased. Results with sheep were similar but the difference between the toxaphene found in fat and lean samples was not so great as in the steers.
—R. MARSHALL.

GUNNING, O. V. (1950.) **Suspected potato poisoning in a mare, with fatal termination.**—*Brit. vet. J.* **106.** 32-33. **186**

Illness in a pony following a feed of sprouted green potatoes is described, together with P.M. findings. G. speculated that the alkaloid solanine may have been the cause of death.—P. H. HERBERT.

EVANS, E. T. R. & EVANS, W. C. (1948.) **The effect of the inclusion of bracken (*Pteris aquilina*) in the diet of rats.**—*Biochem. J.* **44.** p. ix of Proceedings. [Only abst. given, abst. from abst.]. **187**

The authors report that rats fed on a standard stated basal diet, together with the addition of heat-dried ground bracken leaves

(collected in July, when at maximum growth), in the ratio of 60% basal diet to 40% bracken powder, eventually developed symptoms of vitamin B_1 deficiency. Unless treated, they lost weight and died within one month ; the animals responded specifically to thiamine therapy.
—H. PAVER.

GUNNING, O. V. (1950.) **Theobromine poisoning in ducks due to the feeding of cacao waste products.**—*Brit. vet. J.* **106.** 31-32. **188**

Five laying ducks out of 35 died as a result of poisoning by cacao waste products. No lesions were found P.M.—E. EDEN.

See also absts. **214** (cyanide and fluoroacetate); **272-274** (reports, Australia).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease).

AEBERSOLD, P. C. (1949.) **Production and availability of radioisotopes.**—*J. clin. Invest.* **28.** Pt. I. 1247-1254. [Author's conclusions copied *verbatim.*] **189**

In pointing out the present widespread availability of radioisotopes as a research tool, it must also be noted that this is based on much more than merely the increased availability of isotopes per se. Not only are radioisotopes available in amounts many times the prewar quantities, but they are also readily available as a much greater variety of radioelements. Nearly all the biologically useful radioisotopes, including such important ones as radiohydrogen (tritium, H 3), radiocarbon (C 14), radiophosphorus (P 32), radiosulfur (S 35), radiocalcium (Ca 45), radioiodine (I 131), etc., are produced routinely and are available continuously.

Further, a stock of isotope-labeled compounds is available for the first time. Many complex organic molecules have been labeled or tagged with isotopes and many more will become available in the near future. Heretofore, tracer studies with isotopes were usually limited to following only the radioelement or its simple compounds. The availability of a wide variety of labeled organic and biochemical compounds will certainly promote much more extensive and diversified utilization of isotopes in biology and medicine.

Increased availability of materials and instruments has led recently to a much greater number of hospitals, clinics and other institutions using radioactive materials in routine diagnosis and therapy procedures and in research investigations. Before the war, for instance, little more than a dozen institutions were routinely using radiophosphorus (P 32) and radioiodine (I 131) in diagnosis and therapy. Today 80 different institutions are using either or both of these isotopes in this type of clinical work.

It seems quite certain that with the background at hand and the impetus now gained, future research with isotopes, especially isotope-labeled compounds, will lead to valuable new routine uses of radioisotopes in diagnosis and therapy.

MARINELLI, L. D. (1949.) **Dosage determination in the use of radioactive isotopes.**—*J. clin. Invest.* **28.** 1271-1280 [Author's summary copied *verbatim.*] **190**

When radioactive isotopes are employed either as tracers or in therapy, it is important to be able to determine the radiation dosage. This cannot, in general, be measured, but when the half life, radiation energy, and biological uptake and excretion are known, it can be calculated.

Since the basic information regarding radiation disintegration schemes and energies is scattered through many journals, it has been considered desirable to collect pertinent data. Two extensive tables are presented, for beta and gamma rays respectively, giving half life, radiation average energy, fraction disintegrating per day, and specific dosage data, including the safe tracer concentration, for some 33 isotope elements.

BRUES, A. M. (1949.) **Biological hazards and toxicity of radioactive isotopes.**—*J. clin. Invest.* **28.** 1286-1296. [Author's summary copied *verbatim.*] **191**

The effects of large dosages of radioisotopes resemble to a marked extent those of total-body radiation, with modifications dependent on tissue distribution. Permissible exposure levels are determined by the late or chronic radiation changes, of which malignant changes have quite properly attracted major attention.

There is no evidence to indicate that radiation dosages to tissue corresponding to established "permissible" external dosages (0·3-0·6 rep/week) will result in an increased incidence of malignant disease detectable in a population of moderate size. In making such calculations, it is necessary to estimate maximum local tissue dosage, rather than the mean value for an organ or structure, and to make use

of factors recognizing the greater effectiveness of ionization in areas where it is dense (*e.g.*, alpha-particle ionization).

The suggestion is made that a more conservative figure is desirable where a large population may be affected, and the basis for using larger dosages in clinical investigation, diagnosis, and therapy is discussed.

Bone tumor induction by Sr^{89} has been studied extensively in mice. The data are consistent with the view that each given quantity of radiation to bone confers a given probability of bone tumor formation which may occur at any time following a "latent period." The latent period increases gradually with the dosage. It is not known at present whether a threshold exists for such effects.

SOLOMON, A. K. (1949.) **Equations for tracer experiments.**—*J. clin. Invest.* **28.** 1297-1307. [Author's summary copied *verbatim.*] **192**

Equations have been developed and discussed covering five common cases of the use of isotopes in biological and physiological systems.

FRIEDELL, H. L. & STORAASLI, J. P. (1949.) **The therapeutic application of radioactive phosphorus with special reference to the treatment of primary polycythemia and chronic myeloid leukemia.**—*J. clin. Invest.* **28.** 1308-1323. [Authors' summary copied *verbatim.*] **193**

The rationale for using P^{32} as an internally distributed source of radiation and its selective uptake by various normal and tumor tissues has been reviewed. The basis for this, which rests on experimental, biological and clinical work, is discussed. The pertinent information necessary to apply P^{32} effectively is noted. Experimental and clinical data in this regard are presented. The physical characteristics of P^{32} and its behaviour biologically are included. Primary polycythemias and chronic myeloid leukemias are effectively treated with radioactive phosphorus. Ten cases of primary polycythemia and 15 of chronic myeloid leukemia are reported, confirming the observations of others. P^{32} has also been used for a variety of malignant conditions other than leukemia. None of the responses have been striking. Mention is made of possible beneficial application to widespread metastases to bone from carcinoma of the breast.

RUSSELL, B. & ANDERSON, D. (1950.) **Protection of the skin from sunburn. Comparison of the absorption spectra of screening agents and their efficacy in eczema solare.**—*Lancet.* **259.** 247-250. [Authors' summary copied *verbatim.*] **194**

Protection against the sunburn spectrum is provided by a vanishing-cream type base containing tannic acid 5% ; quinine hydrochloride 5% ; pyribenzamine 5% ; sodium *p*-aminobenzoate 10% ; salol 10% ; or yellow soft paraffin 50%. Any one of these creams may be used to prevent sunburn, but tannic acid is the first choice. When these substances are used in the treatment of eczema solare and other light-activated diseases, a watch must be kept for skin intolerance to the light-screening active principle itself or to some component of the base. Almost any substance may occasionally cause contact eczema, but some are safer than others ; of the above list, tannic acid is the most innocuous, followed by salol, sodium *p*-aminobenzoate, pyribenzamine, and quinine.

Sodium *p*-aminobenzoate should not be used if there has previously been sensitisation to sulphonamides or benzocaine. Yellow soft paraffin is an effective screen when added to creams in proportions of 50% or more, but its occlusive and "heating" properties may cause discomfort. In proportions of 25% and less it does not screen but, on the contrary, has an intensifying effect in the sunburn spectral range. The type of base used has a marked influence on the efficacy of light-screening agents. The vanishing-cream type of base is both effective and of good cosmetic quality. In the more unusual cases of sensitisation to the violet-blue region of the spectrum, these substances are ineffective and recourse must be had to physical screens, but these are only partially effective.

BOGEN, E. (1949.) **Laboratory aspects of streptomycin.**—*J. Amer. med. Ass.* **140.** 469-473. [Author's summary copied *verbatim.*] **195**

During the past year there has become available cheaper, purer and less toxic streptomycin, but it remains the only antibiotic of proved value in the treatment of tuberculosis. Its chemical identity has been established and chemical as well as biologic assay methods developed, but it has not yet been synthesized. It is absorbed only by parenteral routes, widely but not uniformly distributed in the body and excreted in the urine in a different manner than is penicillin. It appears to prevent multiplication without interfering with several other physiologic functions of tubercle bacilli, but the exact mechanism of its action is still obscure.

The blood levels after varying doses in different species of animals and in persons of different size have been studied. The minimal lethal doses and the toxic consequences of

various doses and blood levels have revealed the limits of allowable dosage. Animal experiments and clinical experience have established the minimal effective daily dose that may be given. Smaller amounts given at greater intervals are safer and just as therapeutically valuable as the large amounts divided into frequent doses previously recommended.

Resistant forms of tubercle bacilli form the chief obstacle to its success. Combination of streptomycin with other forms of treatment, medical and surgical, offers at present the best hope of preventing the multiplication of these resistant forms. Indications for streptomycin have become more definite and its limitations are better appreciated, but much remains to be learned in order to utilize to the utmost this important advance in the treatment of tuberculosis.

FRANCIS, J. (1949.) **Blood and milk-levels produced by sulphone and various sulphonamides in domestic animals.**—*J. comp. Path.* **59.** 245-264. **196**

F. discussed the blood and milk levels of sulphonamides in various species after oral, intraperitoneal and intravenous administration. Those used were: sulphanilamide, sulphathiazole, sulphapyridine, sulphadiazine, sulphamerazine, sulphamethazine, 4 : 4′ diaminodiphenyl sulphone and 4′ nitro : 4′ aminodiphenyl sulphone. Generally the animals (horses, cows, calves, sheep, pigs, mice and chicks) were either fed the drug at the rate of 0·1 mg. per kg. body weight or were given an intravenous injection of 0·05 mg. per kg., but other doses were also used. Blood level curves from 0-50 hours after dosing were presented and the areas under these curves were calculated and tabulated.

From the results reported and other evidence in the literature it is concluded that doubling the dose of the sulphonamide drugs trebled the blood level curve area.

The rate of absorption and disappearance of the drugs from the blood stream were calculated by comparing the curve obtained following intravenous and intraperitoneal injections and oral dosing. There were striking differences in the behaviour of individual drugs in the different species; 4 : 4′-diaminodiphenyl sulphone produced the best level in most animals, a notable exception being the pig. In this species its place was taken by sulphamethazine. 4 : 4′-Diaminodiphenyl sulphone produced methaemoglobinaemia in the mouse, pig and horse; toxic nervous effects were noted in the sheep.

Acetylation of the drugs after absorption and the effect of the age of the animals were also studied.—E. EDEN.

SCHEIDY, S. F., MCMANUS, E. C., TILLSON, E. K. & PITT, A. A. (1949.) **Blood concentrations following the administration of sulfamerazine and sulfamethazine to cattle.**—*Vet. Med.* **44.** 157-162. **197**

Appreciable blood concentrations of free sulphonamides were maintained in cattle after either intravenous injection of sulphamerazine and sulphamethazine in equal parts or the administration of the same drugs *per os* as a suspension or as compressed tablets.

Even when as much as 0·15 mg. per kg. was injected intravenously, no significant changes could be detected in the concentration of the more important constituents of the blood (haemoglobin, red and white cell counts, non-protein-nitrogen and creatinine). Hence the combination of these two drugs was not only efficient, but also safe when given to young calves.—E. EDEN.

OTTOSEN, H. E. (1949.) **A case of renal sulfathiazole concretions and nephrosis in a calf.**—*Nord. Vet.-med.* **1.** 410-415. [In English: Swedish summary.] **198**

A calf, one month old, affected with diarrhoea was treated twice daily for five days with 5 g. sulphathiazole. Its health rapidly deteriorated and it was killed five days later. The kidney lesions were described. The calculi found in the renal tubules were mainly composed of acetylsulphathiazole. When this drug is used in cases of dehydration, ample water and sodium bicarbonate should also be given.—E. EDEN.

BIGGER, J. W. (1950.) **Synergism and antagonism as displayed by certain antibacterial substances.**—*Lancet.* **259.** 46-50. [Author's summary copied *verbatim.*] **199**

The antibacterial action of six substances—sulphathiazole, penicillin, streptomycin, chloromycetin, boric acid, and *p*-aminosalicylic acid—acting in pairs on *Bact. coli* in a synthetic medium was studied.

Synergism was demonstrated in the case of every combination except one. Antagonism was demonstrated in the case of five combinations. In only three cases was it marked and permanent, and in only one of these (boric acid and sulphathiazole) was each substance antagonistic to the other. The theoretical and practical importance of the findings are discussed.

MORSE, E. V. (1950.) **The treatment of bovine pyelonephritis.**—*Vet. Med.* **45.** 221-224. **200**

Different treatments advocated for pyelonephritis are discussed. Sulphonamides are generally unsatisfactory and better results are obtained with the use of penicillin. Doses of 2-3 million units given intermittently during a period of ten days are recommended.

—E. EDEN.

HOLMES, J. W. H. ((1949.) **Blood transfusion in animals : its theory and practice. Discussion by the Central Veterinary Society.** —*Vet. Rec.* **61.** 551-552. Discussion : p. 554. **201**

In cattle, H. takes the donor from the same herd as the recipient. He stated that blood grouping is unimportant in dogs and cattle. He had not encountered complications from incompatibility of blood groups and found that the only danger is that of citrate poisoning. He described briefly the methods he uses.—G. FULTON ROBERTS.

BREW, J. D. & DILL, L. V. (1949.) **Rate of blood flow through standard gage needles under pressure.**—*J. Amer. med. Ass.* **140.** 1145-1147. [Authors' conclusions copied *verbatim.*] **202**

When the need or possible need for the rapid transfusion of blood exists, a transfusion set which can constantly infuse large quantities of liquid should be utilized. The effect of rapid blood loss may be minimized by the application of pressure within physiologic limits and the use of needles of sufficient bore to allow infusion of large quantities of blood. Under the conditions of this experiment, it would seem that the utilization of pressure from 100 to 200 mm. of mercury on the transfusion system and 15 gage needles will suffice to transfuse blood at a rate sufficiently rapid to meet all but the most severe and sudden types of blood loss.

SCHINDLER, R. (1950.) Ein Beitrag zur Technik der Bluttransfusion beim Hund. **[The technique of blood transfusion in dogs.]** —*Berl. Münch. tierärztl. Wschr.* No. 1. pp. 1-4. **203**

Direct transfusions were made easily and without danger using the transfusion apparatus employed in human surgery. Indirect transfusions were also successful. Blood group complications were no hindrance in the initial transfusions, but the development of immune agglutinins sometimes caused accidents after subsequent transfusions.—L. M. MARKSON.

WILLIAMS, R. E. (1947.) **Blood transfusion in dogs.**—*Vet. Rec.* **59.** 637-638. **204**

The indications, technique and equipment for carrying out blood transfusion in dogs are briefly described.—K. G. TOWERS.

SULMAN, F. G. TWERSKI, J. (1948.) **[Lack of effect of prolactin on milk production of cows.**—*Refuah vet. Palestine.* **5.** 53. English summary : p. 73. **205**

Daily subcutanous injection of 750 units of prolactin did not increase the milk production of two cows. It is pointed out that oestrogen and thyroid treatment is more effective for this purpose.—E. EDEN.

ZUCKERMAN, S., PALMER, A. & HANSON, D. A. (1950.) **The effect of steroid hormones on the water content of tissues.**—*J. Endocrinol.* **6.** 261-276. **206**

The water content of the different tissues of young female rats was measured at six-hourly intervals during the first three days following a single subcutanous injection of either α-oestradiol or progesterone or deoxycorticosterone acetate.

About six hours after injection of α-oestradiol there was an increased water content in the reproductive tissues (uterus, vagina) and skin ; this was followed by a decrease at about 24 hours and a second increase at about 66 hours. The changes in certain non-reproductive tissues (striated muscle, heart, pancreas and brain) were in the inverse direction. The effect of progesterone was reciprocal to that of α-oestradiol ; deoxycorticosterone produced shorter and more frequent (at least three) cycles of hydration and dehydration.—E. EDEN.

BÁRÁNY, E. & NORDQVIST, P. (1949.) **Influence of histamine on nerve block due to anti - histaminics. [Correspondence.]** — *Nature, Lond.* **164.** 701. **207**

Most anti-histamine drugs are local anaesthetics and vice versa *e.g.* procaine has an anti-histaminic action. Moreover the presence of large amounts of histamine has been demonstrated in certain nerves. Experiments with frog nerve-muscle preparations indicated that a nerve block caused by pyribenzamine could be removed by washing the nerve with a histamine solution and also that if the nerve was placed in a mixture of histamine and blocking agent, no block occurred.—J. A. NICHOLSON.

KNÖPFEL, W. (1949.) Die Narkose beim Schwein unter besonderer Berücksichtigung des Narconumal-Roche. **[Intravenous narcosis in pigs.]**—*Inaug. Diss., Zürich.* pp. 51. **208**

The use and action of various narcotics for

pigs are reviewed. Experiments with narconumal, the sodium salt of 1 methyl 5, 5, allylisopropylbarbituric acid, are reported. This drug is considered to be suitable when narcosis of short duration is desired ; administered intravenously a dose of 0·02-0·03 g. per kg. body weight will induce narcosis lasting 2-6 min.

—E. EDEN.

PENNINGTON, D. (1950.) **A reaction of bacterial cells with formaldehyde.**—*J. Bact.* **59.** 617-623. [Authors' summary copied *verbatim.*] 209

Treatment of cells of gram-positive bacteria with neutral formaldehyde destroys the ability of certain of the cells to react with basic dyes. The relative proportion of cells so reacting is a function of the age of the culture. Old cultures consist predominantly of cells that fail to stain after treatment with neutral formaldehyde. Cultures in the logarithmic phase of growth often contain approximately equal numbers of stainable and nonstainable cells after treatment with neutral formaldehyde. The effect is prevented or reversed by treating the cells with hydrogen ions, alcohol, picric acid, osmic acid, surface-active agents, or even brief air drying.

HURST, H. (1949.) **Reversible action of D.D.T. [Correspondence.]**—*Nature, Lond.* **163.** 286-287. 210

In a study of the action of D.D.T. on resistant insects, relationships between temperature, cuticle permeability and metabolic activity were demonstrated. Mature blowfly larvae were extremely resistant to the contact action of excess crystalline D.D.T., metamorphosis proceeding normally within 2-3 days at 20°C. Paralysis followed exposure to a temperature of 36°C. for two hours on lowering to 20°C. The larvae recovered when the temperature was raised, this response to change in temperature being reversible many times. When the cuticle of paralysed larvae was painted with 5% potash, recovery was almost immediate. With larvae immersed in 2% solution of D.D.T. in kerosene, paralysis occurred in 20-30 min. at 20°C. and increase in temperature did not promote recovery. Adult *Calliphora* flies were paralysed rapidly (15-20 min., 20°C.) by contact with excess crystalline D.D.T., a delay in the time of onset of paralysis being obtained if the flies were first sprinkled lightly with fine alumina powder.

These results were interpreted in terms of the dynamic balance between a rate of D.D.T. activity and a rate of metabolism, both being dependent on temperature.

The nature of the interference in oxidative metabolism in D.D.T. paralysis was explored by measuring changes in respiration rates of adult blowfly larvae on paralysis and after injection of sodium succinate, pyruvate, lactate or glucose. Succinate induced complete and glucose partial recovery ; lactate and pyruvate were without effect. The effect of D.D.T. appeared to be analagous to the narcotic action of fat solvents involving an interference with the utilization of succinate, an essential metabolite in oxidative metabolism.—H. PAVER.

See also absts. **15** & **16** (streptomycin); **18-21** (TB.); **41** (streptomycin and sulphadiazine in experimental brucellosis); **63** (protozoan diseases in poultry); **64** (carbon tetrachloride in avian coccidiosis); **65** (sulphonamides); **82** (vitamin B, in bovine catarrhal fever); **93** (infectious sinusitis in turkeys); **110** (D.D.T. and benzene hexachloride); **119** (phenothiazine); **122** (sodium fluoride); **126** (hetrazan); **176** (B.A.L. in lead poisoning); **178** (methionine in selenium poisoning); **240** & **241** (antibiotics and bacteria in bull semen); **284** (book).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

WALKER, A. R. P. (1949.) **Effect of low fat intakes and of crude fibre on the absorption of fat.**—*Nature, Lond.* **164.** 825-827. 211

Observations on faecal fat excretion in man during a period (124 days) of controlled intake were reported. Previous observations that faecal fat is increased with lower intake (60 g. per day to 3·3 g. per day) were confirmed. Increased fibre content of the diet at constant fat intake also caused increased faecal fat losses. W. considered that increased excretion noted when intake is decreased is due not to less complete absorption, but to increased formation in the intestine. High faecal fat was also reported for two Bantu and one European on high fibre diets containing fats of known high digestibility.

—P. H. HERBERT.

SELYE, H. & TIMIRAS, P. S. (1949.) **Participation of 'brown fat' tissue in the alarm reaction. [Correspondence.]**—*Nature, Lond.* **164.** 745-746. 212

Stresses of various kinds, such as cold and starvation, caused a release of lipoids from the interscapular glands (brown fat tissue or hibernating gland) of rats. This gland histologically resembles the adrenal cortex, and also its discharge seems to be similar to the release of adrenal cortical lipoids during the alarm reaction initiated by some form of systemic stress.

—E. EDEN.

KRATZING, C. C. & SLATER, E. C. (1950.) **Effect of sulphonamides on the aneurin economy in animals.**—*Biochem. J.* **47.** 24-

35. [Authors' summary copied *verbatim.*] 213

A method of determining aneurin in rat liver and rat carcasses is described. An approximately linear relationship was found between the aneurin content of the liver and the dietary intake of aneurin over the range 7·6-20·7 μg./day.

The inclusion of 0·55% sulphadiazine in a diet moderately low in aneurin brought about the following changes in young rats compared with controls fed the same diet without the drug : (1) the aneurin content of the liver was about 60% greater ; (2) the aneurin content of the whole rat less liver was also greater ; (3) the blood pyruvate was lower by about 30% ; (4) the kidney weight was 10% less ; (5) the liver weight was 10% greater ; (6) the thyroid was three times as heavy. Injections of the drug had the same effect as oral administration. Sulphamerazine behaved in the same way as sulphadiazine, but sulphanilamide, sulphapyridine, sulphathiazole, succinylsulphathiazole and 2-amino-4-methylpyrimidine, in equimolar amounts, did not show this effect. *p*-Aminobenzoic acid (in an equimolar amount) did not behave like sulphadiazine, nor did it prevent the effects of the sulphonamide when the two were fed together. The effect of sulphadiazine was also not influenced by the inclusion or absence of folic acid and biotin in the diet.

Sulphadiazine had no appreciable effect on the riboflavin content of the tissues. Inclusion of sulphadiazine in a diet low in aneurin prevented the development of typical aneurin-deficiency symptoms, although it did not prolong the life of the rats. It is concluded that sulphadiazine has a true aneurin-sparing action on the animal. This cannot be explained on the basis of (1) an effect on the renal threshold of aneurin ; (2) change of bacterial flora in the intestine with altered vitamin synthesis ; (3) acetylation of sulphonamide ; (4) inhibition of intracellular enzymes containing aneurin.

It is thought probable that the sulphadiazine, by interfering with some catalytic mechanism, alters the metabolism in such a way as to decrease the animal's requirement of aneurin.

It is suggested that this alteration results from the inhibition of the synthesis of thyroxin caused by certain sulphonamides.

HICKS, S. P. (1950.) **Brain metabolism in vivo. I. The distribution of lesions caused by cyanide poisoning, insulin hypoglycemia, asphyxia in nitrogen and fluoroacetate poisoning in rats.**—*Arch. Path.* **49.** 111-137. [Author's summary copied *verbatim.*] 214

The distribution of destructive lesions of the brain and other organs of rats caused by insulin hypoglycemia, cyanide and fluoroacetate poisoning and by asphyxia was studied with a view to determining the mechanisms involved in the production of selective lesions. Cyanide poisoning, insulin hypoglycemia and asphyxia damaged especially the brain but did not produce identical patterns of lesions. Fluoroacetate poisoning was particularly destructive to the heart and the testes but caused little or no injury of the brain. Asphyxia and insulin hypoglycemia produced mild damage in the heart, but cyanide poisoning never did. Cyanide, in contrast to the other agents, tended to be selectively destructive to white matter in the brain.

In view of the different patterns of injury produced in the brain by different agents it is not considered that the variable richness of blood supply of different parts of the brain is the only important factor governing the distribution of selective lesions. Rather, other factors, especially the individual metabolic patterns of different brain areas and other tissues, appear to be of prime importance. In this connection the degrees to which cyanide acts on the heart and the white matter may be significant. Heart muscle, of all tissues the richest in cytochrome oxidase, was spared by cyanide, while white matter, with a very low content of the enzyme, was damaged. Further, fluoroacetate which is believed to inhibit one phase of pyruvate catabolism, was especially deleterious to heart muscle, which is dependent not only on glucose (the prime substrate of the brain) but also on pyruvate.

These concepts are considered tentative at present pending the results of studies of other enzyme inhibitors now in progress.

MCALEER, W. B. (1948.) **A study of calcium, inorganic phosphorus and magnesium values in the blood serum of cattle, horses, sheep and pigs in Ireland.**—*Irish Vet. J.* **2.** 3-14 ; 29-44 & 48-57. 215

A large number of animals of the species mentioned were studied. Changes in the blood levels were followed throughout the year and fluctuations during the day and from day to day were noted. Statistical analysis of the data was not given. The author pointed out that his values were higher than those previously reported in the literature and his findings on seasonal variation also disagreed with previously published work.—E. EDEN.

GARNER, R. J. (1950.) **Physiological variations in serum proteins in cattle. [Correspondence.]**—*Nature, Lond.* **165.** 896-897. 216

In cattle, the serum globulin levels in-

creased with age, adult values being reached comparatively late, at about five years of age, the levels of other serum proteins remaining stationary. Previous reports in the literature of sex differences in these respects were confirmed. Control and treated animals *i.e.* those given protein supplements, should therefore be of comparable ages in making tests which are affected by the protein concentration of the serum as in the case of the flocculation test for hepatic damage.—E. EDEN.

VAN ROYEN, A. H. H. & BOOGAERDT, A. (1949). Over het voorkomen van haptoglobine in het bloed van het rund. [**Haptoglobin in the blood of cattle.**]—*Tijdschr. Diergeneesk.* **74.** 818-820. [English summary.] **217**

The haptoglobin content of the blood of tuberculous cows was not higher than that in healthy ones ; in some infectious and inflammatory conditions it was higher than normal and fell again when the condition was cured.

—R. MARSHALL.

LAST, J. H., JORDON, P., PITESKY, I. & BOND, E. (1950.) **The eosinophil response : immediate vs. delayed eosinopenia.**—*Science.* **112.** 47-49. **218**

A study of the eosinophile response to the intravenous infusion of epinephrine or histamine in anaesthetized dogs. Histamine produced eosinopenia within 10-15 min. of administration, the count rising again to about 60% of the preinoculation control values. Epinephrine produced a gradual eosinopenia which took four hours to develop fully. The intravenous administration of large doses of ACTH or aqueous adrenal cortical extract also produced the delayed eosinopenic reaction. The implications of these findings are discussed.

—L. M. MARKSON.

WEISBERGER, A. S., HEINLE, R. W., STORAASLI, J. P. & HANNAH, R. (1950.) **Transfusion of leukocytes labeled with radioactive phosphorus.**—*J. clin. Invest.* **29.** 336-341. [Authors' summary and conclusions copied *verbatim.*] **219**

The fate of transfused leukocytes was studied by determining the distribution of radioactivity in various tissues of the body following the injection of leukocytes labeled with P^{32}.

In rabbits sacrificed 30 minutes after the intravenous injection of radioactive leukocytes, by far the majority of the radioactivity was found in the lungs. The marked accumulation of radioactivity in the lungs also occurred when the radioactive leukocytes were transfused via the aorta as well as the femoral and carotoid arteries. The accumulation of radioactivity in the lungs was correlated with the histologic demonstration of engorgement of the intra-alveolar septa of the lungs with leukocytes.

In rabbits sacrificed four to six hours after the injection of radioactive leukocytes the majority of the radioactivity was found in the spleen and lungs on a per cent. per gram basis. On a total organ basis, however, the liver contained the majority of the radioactivity. This shift of radioactivity away from the lungs is probably due to destruction of the transfused leukocytes but may be due to migration of intact leukocytes with transfer of the radioactive phosphorus to the liver.

Under the conditions of these experiments, the lungs play the major role in the prompt removal of transfused leukocytes from the peripheral blood. The liver and spleen also contribute to the rapid disappearance of the transfused cells but not to the same extent as the lung. The role of the peripheral capillaries in the mechanism is negligible.

That the removal of the transfused white cells is more than a mere filtration of foreign bodies by the reticulo-endothelial system is indicated by the selective action of the lungs in removing cells transfused into the arterial as well as the venous system.

MITCHELL, R. L. & TOSIC, J. (1949.) **'Trace elements' in rumen micro-organisms.**—*J. gen. Microbiol.* **3.** No. 1. pp. xvi-xvii of Proceedings. **220**

Micro-organisms in the rumen have the capacity of concentrating minerals. Over ten times the amounts of copper, nickel, molybdenum and zinc than those present in the food were found in these organisms. A less pronounced accumulation was observed for vanadium, titanium, manganese and iron.

—E. EDEN.

ARGAUD, R. & GAN, J. (1946.) Sur la metaplasie biliaire de la muqueuse duodénale, au niveau de l'ampoule de vater, chez le cheval. [**Biliary metaplasia in the mucosa of the equine duodenum.**]—*C. R. Acad. Sci., Paris.* **222.** 1134-1136. **221**

The double circular cushion which surrounds the ampulla of Vater (diverticulum duodeni) in the horse has a characteristic histological structure. This is due to a great increase of glandular tissue which differentiates its mucosa from that of the duodenum or the hepatic duct. It is suggested that this glandular hypertrophy and hyperplasia to some extent compensate the horse for the absence of a gall bladder in the sense that it is here that mucin

is added to the bile. This hyperplasia also occurs following cholecystectomy in other animals.—J. A. NICHOLSON.

WOLFF, É. (1946.) Les changements de sexe. [**Sex reversal.**]—pp. 306. Paris : Librairie Gallimard. Fr. 205. 222

This is a most readable book. The author can range happily over abstruse subjects with a delightfully lucid exposition and balance. The introductory chapters afford a model of compactness and clear statement. Confident in the knowledge that authority speaks, one reads of the gametes of algae, isogamy, sexuality without sexual differences, anisogamy and the evolution of sex in terms of differences, sex and genetics and chromosomes of all sorts. "La différenciation sexualle est-elle toujours et nécessairement conforme au déterminisme sexuel ? " asks the author and answers it in the succeeding parts of the book.

The preliminaries of the book take up several chapters dealing with the concept of sex and spontaneous hermaphroditism ; it is in these chapters that we learn of sex determination and the general phenomenon of sexuality, gametogenesis and the factorial expression of it all as set out in the first law of Mendel. We hear of gonadic differentiation and the differentiation of the cellular layers (perhaps a little briefly but, nevertheless, adequately). Chapter 5, the introduction to the second part of the book, broadly speaking, concerns itself with apparent sex-change brought about by the inversion of secondary sexual characters, the effects of castration, sex hormones and their mechanism and nature. The third part, and one of the most interesting, is entitled Hormonal Intersexuality and covers the problem of freemartins as commonly encountered amongst cattle. The results of Burn's and Humphrey's work on the axolotl, and Witsche's confirmatory experiments, are reviewed. A consideration of genetic intersexuality forms the fourth part of the work and covers such topics as the results of partial castration in birds, and intersexuality by hybridization as in certain lepidoptera. The absorbing question of gynandromorphism is dealt with in the fifth and final part ; here we are told something of the views of Goldschmidt and Katsuki, and of Morgan and his school. After completing a closing chapter, which draws together the threads of the whole story and summarizes the conclusions reached, the reader lays aside the book with a feeling of great satisfaction with all he has read.

—C. HORTON SMITH.

ILLARI, G. & CALISTI, V. (1948.) Sopra il tappo mucoso da gravidanza ed il secreto estrale delle bovine. [**The mucous plug in pregnancy and the oestral secretion of the cow.**]—*Zootec. Vet., Milan.* 3. 549-552. 223

The authors made a chemical study of the mucous plug of the cervix of the pregnant uterus and the oestral secretion of healthy cattle, with a view to determining the biological functions of the two materials. For this purpose they estimated the nitrogen content and carried out qualitative and quantitative analyses of the residual ash, with the following results :—mucous plug—7·63% ash, 8·05% nitrogen ; oestral secretion—63·10% ash, 3·75% nitrogen. In both ashes there were present iron, calcium, magnesium, sodium, potassium, carbonate, sulphate, phosphate and chloride ions. The analysis of the nitrogen content of the two secretions indicated that the amino-nitrogen values found after hydrolysis were practically equal (mucous plug 6·42% ; oestral secretion 6·21%). In the case of the nitrogen not precipitated by phosphotungstic acid the ratios between the amino-nitrogen and the non-amino-nitrogen were also similar. In the case of the nitrogen precipitated by phosphotungstic acid, there was a marked difference in this ratio, since the oestral secretion contained a much higher proportion of amino-nitrogen.

—I. W. JENNINGS.

CHENG, P., ULBERG, L. C., CHRISTIAN, R. E. & CASIDA, L. E. (1950.) **Different intensities of sexual activity in relation to the effect of testosterone propionate in the male rabbit.** —*Endocrinology.* 46. 447-452. [Authors' summary copied *verbatim.*] 224

Twelve rabbits were used to determine the effect of testosterone propionate on semen production and sexual libido for various frequencies of collection. The treated rabbits were injected with 10 mgs. of hormone daily. Attempts to collect semen were made six times over a period of three hours on each collection day. The intervals between collection days were one, two and four days.

In general the results of these experiments indicated that there is an increase in libido due to treatment. This is shown by an increase in the number of completed ejaculates by the males receiving the hormone and also by a decrease in the length of time required by the individual to react to the sexual stimuli. There was some increase in the volume of the fluid portion of the semen and a large increase in the glairy substance. A decrease in sperm concentration was observed but on the other hand there was no significant change in the total

number of sperm. The lowering of the sperm concentration may be due to increased dilution with seminal fluid. The magnitude of the treatment effect did not in general seem to differ for the three frequencies of semen collection.

BERGSTRAND, C. G. (1950.) **The influence of testosterone propionate on skeletal development in the immature rabbit.**—*Acta endocrinol.* **4.** 91-101. [In English. Author's summary copied *verbatim.*] **225**

Immature rabbits were injected with 5 mg. testosterone propionate three times a week from the beginning of the second week of life to an average age of 53 days. The lengths of the left femur and of the tibia were measured on X-ray films and the animals were compared with controls from the same litter. The femur and the tibia of the testosterone treated animals were shorter, but the difference was slight and significant only for the femur and almost signicant for the tibia. The difference in weight between the testosterone treated animals and the controls was not significant. Histological examination of the distal femoral epiphyseal cartilage did not show any changes, in contrast to earlier investigations in rats and mice.

Immature rabbits were injected with various doses of testosterone propionate (including very high doses) during the first few weeks of life. Roentgenological examination of the left hind leg did not show any changes in comparison with controls from the same litter.

The significance of these results is discussed. It is pointed out that an inhibition of growth in length may, or may not, be accompanied by histological changes in the epiphyseal cartilage. Earlier investigations show that, in rats and mice, testosterone propionate has an effect on the histology of the epiphyseal cartilage. The absence of such changes in the present investigation can be explained by assuming that the inhibition of growth in length was too slight to be reflected in the epiphyseal cartilage.

FINERTY, J. C. & MEYER, R. K. (1950.) **The effects of graded dosages of estrogen upon pituitary cytology and function.**—*Endocrinology.* **46.** 494-502. [Authors' summary slightly modified.] **226**

Histological studies and gonadotropic assays were made of the pituitary glands of immature ovariectomized rats which had been injected with graded amounts of dienestrol (0·025 μg. to 5·0 μg./day) for a period of ten days.

The high pituitary gonadotrophic content of castration was not changed significantly by low estrogen injection (0·10 μg. dienestrol/day) but was markedly reduced by high estrogen (5·0 μg. dienestrol/day). The percentage of basophile cells was decreased in direct proportion to the concentration of estrogen. Acidophilic cells were increased in percentage by the lower doses reaching a peak of 47·4 per cent. at 0·10 μg. dienestrol per day, and decreased by the highest doses to 31·2 per cent., compared to 39·1 per cent. in the uninjected ovariectomized controls.

Dienestrol exerts effects upon the structure and function of the hypophysis similar to those of estradiol and diethylstilbestrol.

See also absts. 152 (manganese and growth and lactation); 285 (dictionary of chemistry); 286 & 287 (books, physiology).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

SOULSBY, E. J. L., NORVAL, J. & WILSON, J. E. (1950.) **The isolation of *Salmonella typhi-murium* from the carcase of a bullock submitted for meat inspection.**—*Vet. Rec.* **62.** 291. **227**

An account of illness in a bullock from which *S. typhi-murium* was isolated P.M.

—R. MACGREGOR.

GRUMMER, R. H., BRAY, R. W. & BOHSTEDT, G. (1950.) **Contamination of pork muscle and fat in hogs treated with benzene hexachloride.**—*J. Anim. Sci.* **9.** 112-114. **228**

Six pigs in groups of two were treated with benzene hexachloride each dusted with 2 oz. containing 10% γ-isomer and sprayed with three quarts of a solution containing 40 lb. of 6% γ-isomer per 100 gal. water per animal in the following way :— group (1) dusted three times in the first six months of age and sprayed ten days before and one-day before slaughter at seven months ; group (2) as (1) but not sprayed : group (3) as (1) but sprayed ten days before slaughter. A seventh pig untreated served as control.

Only the meat from animals treated as in group (1) *i.e.* sprayed immediately before slaughter, had an off-flavour in both the lean and the fat. Meat from the others was not different from that of the control and treated animals revealed no gross symptoms of toxicity.

—E. EDEN.

ROBINSON, R. H. M., PUGH, A. M. & SELBIE, F. R. (1949.) **A bacteriological study of dried whale meat with particular reference to the presence of clostridia.**—*J. Hyg., Camb.* **47.** 236-243. **229**

Thirty-nine samples of dried whale meat of the 1946-47 and 1947-48 Antarctic whaling seasons were investigated for bacterial contamination with especial reference to clostridia and their possible role in the production of food poisoning. Detailed accounts of the techniques used are given. Bacterial counts per g. of meat were found to be surprisingly low. Clostridia were isolated from the majority of the samples and the usual organisms most commonly present were found to be *Cl. sporogenes*, *Cl. bifermentans* and *Cl. tetanomorphium* and occasionally *Cl. welchii*—in fact, the types mainly found in material from mammalian sources. The cultures isolated were never pathogenic to mice *per os* although some strains caused death if 4-day old cultures were used, but death followed a tetanic spasm and resulted from the ammonia content of the culture. It occurred only when a level of 700 mg. NH_3/100 ml. had been attained in the culture. This role of ammonia in causing death was confirmed by injecting solutions of ammonium chloride, when it was found that the lethal dose was reached with an equivalent concentration of ammonia of about 800 mg./100 ml.

The main purpose of the investigation was to determine whether dried whale meat products might be responsible for food poisoning and although full opportunity was given for the development of bacterial toxins no such toxins were detected. The authors are of the opinion that as the only clostridial toxin pathogenic to man by mouth is that of *Cl. botulinum* and as this organism comes from the soil it is not likely to be found in whale meat unless vegetable products are used in the making up of the product for human consumption.

—James H. Hale.

Drysdale, A. (1950.) *Staphylococcus aureus* **food poisoning. An account of an outbreak in Khartoum.**—*J. trop. Med.* (*Hyg.*) **53.** 12-14. [Author's summary slightly modified.] **230**

The largest outbreak of *Staphylococcus aureus* food poisoning that has so far occurred in the Sudan is recorded.

Two strains of *Staphylococcus aureus* were isolated, one from unboiled milk and one from a goat with mastitis from the herd from which the milk was derived. Both strains were of the same phage type—6/47. A monkey fed with the boiled milk developed symptoms of vomiting and diarrhoea.

Investigation of this outbreak suggests that it was caused by an enterotoxic substance produced by the staphylococci incriminated, but the reasons why the staphylococci produced this toxin on one occasion are not clear.

Schoechli, A. (1949.) Über die Ausbreitung einer Schlarlachepidemie durch Milch. **[The spread of an epidemic of scarlet fever through cows' milk.]**—*Schweiz. Arch. tierheilk.* **91.** 780-789. **231**

This is a description of an outbreak of milk-borne scarlet fever in Aarau, a town of some 14,000 inhabitants in Switzerland. It seems to be the first outbreak diagnosed with certainty as milk-borne in that country.

The epidemic began suddenly just after Easter 1949 and was traced to milk from a dairy which supplied 91·4% (192 of 210 cases) of the households in the area affected. Two of six persons working in the dairy were suffering from scarlet fever. Removal of this source of milk supply was immediately followed by a fall in the incidence of new cases and brought the epidemic to an end.

In order to be certain that the milk as collected from the cows was not infected, samples were taken from the numerous small herds involved. No evidence of human haemolytic streptococci was found. It is of interest that raw milk is only rarely consumed in the town, the milk being usually boiled after hand skimming, the cream only being eaten raw. This was the procedure at the time of the outbreak and there was evidence that very small amounts of cream were sufficient to set up the infection.

—E. G. White.

Bidwell, M. H. & Kelly, C. B., Jr. (1950.) **Ducks and shellfish sanitation.**—*Amer. J. publ. Hlth.* **40.** 923-928. **232**

A source of contamination of shellfish by *Salmonella* organisms is pollution of rivers by waste from duck farms.—Roy Mack.

Waksman, S. A. (1949.) **An Institute of Microbiology—its aims and purposes. [Rutgers University.]**—*Science.* **110.** 27-30. **233**

Microbiology, as now understood, embraces the whole investigational complex of the bacteria, fungi, yeasts, protozoa, and algae. The composite science takes note of the occurrence of micro-organisms in nature, their nutrition, structure, and life cycles ; the part they play in many natural processes ; their relation to man, to domesticated and wild animals and plants ; and to one another.

Many bacteriologists have erred in their view that the disease-producing bacteria are the only forms of micro-organisms worth studying. W. quotes, as example, the case of William

Bulloch who contributed to the science of microbiology one of the most comprehensive histories of the subject but omitted any consideration of the fungi and actinomycetes and, even more significantly, paid scant attention to the autotrophic and nitrogen-fixing bacteria which are unique in biology on account of their specific physiological properties, their importance in bacterial taxonomy and their economic status. Because of such neglect eminent microbiologists protested against the lack of proper recognition of microbiology as a field of science.

An Institute of Microbiology is being established by Rutgers University where W. has worked with such profit. The Institute will probably include six major research divisions: general microbiology associated chiefly with structure and function, microbial physiology, antibiotics of micro-organisms, their isolation and purification, vitamins and enzymes and their part in the nutrition of micro-organisms, ecology of micro-organisms and, finally, applied microbiology.—C. HORTON SMITH.

SPIRIDONOV, F. M. (1949.) **[Organization of veterinary work in the Tambov region.]**—*Veterinariya, Moscow.* **26.** No. 6. pp. 36-38. **234**

This region is divided into 60 districts with one main clinic, two regional, two main veterinary centres, 134 dispensaries, seven veterinary laboratories and 15 isolation stables, provided with accommodation for animals. The staff of the region consists of 130 veterinarians, 199 "feldshers" and 386 technical assistants. The usual list of aims is set out, enforcing the raising of the all-round standard of veterinary service. Tables are given for three of the stations giving details of animals dealt with.—F.A.A.

See also absts. **14** (tubercle bacilli in milk); **49** (botulism from pickled herrings); **276** (report, S. Africa); **288** (book, public health); **291** (book, *Trichinella* inspection).

LIVESTOCK HYGIENE

BLACK, F. W. (1950.) **Static pressure and ventilation rates in rooms.**—*J. Hyg., Camb.* **48.** 44-51. [Author's conclusions copied *verbatim.*] **235**

For any one ventilation channel, or for a number of channels across which there is a uniform static pressure difference, the relationships between flow rate and static pressure difference, over a limited range of pressure variation, will fit a curve of the form: flow $= Ap^n$, where p is the pressure difference, A a constant for the channel(s), and n will lie between 0·5 and 1·0.

For a room with fixed boundary conditions, *i.e.* fixed degree of opening of doors, etc., there may sometimes—for quasi-steady external conditions—appear to be a definite relationship between the flow through the room and the pressure difference between one point inside and one point outside it, but this relationship will not be unique. At any instant there will usually be different pressures across the different ventilation channels and the differences between these pressures need not remain constant. A single measurement of static pressure difference cannot therefore form the basis of a method of measuring the natural ventilation rate.

It is impracticable to apply in detail data obtained from observations in one room, to the same room under different conditions or to other rooms differing in size or in siting or with different arrangements of doors and windows.

TOWNSEND, J. G. (1950.) **Investigation of the smog incident in Donora, Pa., and vicinity.**—*Amer. J. publ. Hlth.* **40.** 183-189. **236**

'Smog' results from a weather inversion, which occurs when a layer of warm air comes in over the layer of ground air, which is prevented from rising and being replaced on the ground by new air. In October 1948 a particularly serious smog phenomenon occurred in the steel mill town of Donora in Pennsylvania, which caused 17 deaths. Pre-existing cardio-respiratory diseases were a single common factor among the fatally ill. Nearly 6,000 people were affected to some degree. Carbon dioxide contributed significantly to the overall atmospheric pollution load. To prevent a recurrence, it was recommended that the factories reduce the gaseous contaminants, especially sulphur dioxide, and particulate matter, emitted into the atmosphere.—W. R. BETT.

ANON. (1950.) **The problems of sheep husbandry on granite country: value of winter feed demonstrated on Shannon Vale nutrition station.**—*Agric. Gaz. N.S.W.* **61.** 259-261 & 264. **237**

A summary of recent work carried out by the N.S.W. Department of Agriculture at the Sheep Nutrition Station at Shannon Vale, New England. Whereas, previously, the grazing of sheep on the granite country in New England

was a hazardous and often uneconomic undertaking, the Department's experiments with improved pasture and pasture management have demonstrated that wool-growing sheep can be maintained in good health and condition, with increased wool yields ; breeding and rearing of sheep may be carried out (impossible on natural pasture) and carrying capacity can be greatly raised. Relevant data are included.

—M. C. FRANKLIN.

See also abst. 42 (parturition pens).

REPRODUCTION AND REPRODUCTIVE DISORDERS

CAPOBIANCO, M. (1949.) Valeur de la fécondation artificielle dans la lutte contre les maladies de l'appareil génital : (dourine, vaginite granuleuse, trichomoniase et épididymites contagieuses des animaux). [**Artificial insemination in control of dourine, trichomoniasis and contagious epididymitis and vaginitis.**]—*Bull. Off. internat. Epiz.* 32. 154-169. 238

C. states that sterility is widespread in Italy and other countries, the diseases which are transmitted at coitus being important causative factors. The direct losses suffered such as abortion, depreciation of females, loss of milk and of young animals account for an annual loss of 1,000,000,000 lire. It is more difficult to place a value on the indirect losses caused by the shortage of replacements. A table is given of percentage losses in the various Italian provinces. Infectious forms of sterility predominate in the north and centre and non-specific forms in the south and island provinces.

Among horses the chief losses are from dourine, but artificial insemination is also useful in controlling physiological sterility. Brucellosis is the main form of preventable sterility in sheep.

C. gives a brief outline of the development of the practical aspects of artificial insemination with particular reference to Italian conditions. Its practice is regulated by legislation and must be under the control of specially trained veterinary surgeons. A table is given of the distribution of centres and the number of operations carried out at each centre. The specific venereal diseases are dealt with individually. By the castration or slaughter of affected males and the widespread practice of artificial insemination, dourine has been practically eliminated from 16 provinces of N. Italy. Spread of coital exanthema is completely checked by artificial insemination and in granular vaginitis in addition to the prevention of spread, non-conception resulting from deleterious action of vaginal inflammation on spermatozoa is avoided. In trichomoniasis control, treatment of females followed by natural service is very dangerous as one infected animal may be responsible for a recrudescence, whereas artificial insemination completely prevents the spread. Contagious epididymitis is a condition which gives rise to characteristic lesions in the genital tract in both sexes and therefore interferes with natural service, which would in any case tend to spread the causal agent. [It is not clear from the article whether a specific epididymitis occurs in bulls in Italy.].

Although coitus is not the most important method of transmission of brucellosis, the practice of artificial insemination will prevent the use of bulls with lesions on the external genital organs and prevent infection of clean bulls from the genital tract of diseased females.

—E. J. H. FORD.

RAO, C. K. & HART, G. H. (1948.) **Motility of bovine spermatozoa.**—*Amer. J. vet. Res.* 9. 286-290. 239

Sperm motility is normally initiated in the ampullae. It may be classified into maximal, circular or convulsive types, according to vigour and direction of movement. Motility is still the best criterion for estimating the fertilizing capacitity of semen, and a method of grading samples by their degrees of motility is described.

—ROY MACK.

FOOTE, R. H. & BRATTON, R. W. (1950.) **Motility of spermatozoa and control of bacteria in bovine semen extenders containing sulfanilamide, polymyxin and aureomycin.**—*J. Dairy Sci.* 33. 539-543. [Authors' summary copied *verbatim*.] 240

The effect of polymyxins D, B and E and aureomycin on the motility of bovine spermatozoa and upon the control of bacterial growth in bovine semen extended with citrate buffered yolk and stored at 5°C. was investigated. It was found that 200 μg. of polymyxins D, B or E, or 100 μg. of aureomycin could be added per ml. of extender without spermicidal effects. These levels of antibiotics were highly bacteriostatic and/or bactericidal.

FOOTE, R. H. & BRATTON, R. W. (1950.) **The fertility of bovine semen in extenders containing sulfanilamide, penicillin, streptomycin and polymyxin.**—*J. Dairy Sci.* 33.

544-547. [Authors' summary copied *verbatim.*] 241

By use of the split sample technique the fertility of bovine semen extended in 3·6 per cent. citrate-yolk containing no antibacterial agent, sulfanilamide, penicillin, streptomycin, polymyxin or a combination of these four antibacterial agents was studied. Semen was used from bulls with histories of low fertility, as well as from bulls with histories of high fertility.

The per cent 60- to 90-day non-returns to first and second service cows for the treatments, no antibacterial agent, sulfanilamide, penicillin, streptomycin, polymyxin, and sulfanilamide plus penicillin plus streptomycin plus polymyxin were, respectively, for the high fertility bulls, 63, 64, 70, 69, 68, and 67 ; for the low fertility bulls, 58, 60, 67, 66, 59, and 69 and for both the high fertility and the low fertility bulls combined, 61, 62, 68, 68, 64, and 68. On the bases of these results and those reported by other workers, it is concluded that the addition of penicillin, streptomycin or a combination of these plus polymyxin and sulfanilamide to present day extenders may be expected to increase the over-all fertility level of bovine semen used for artificial breeding.

GHOSH, D., CASIDA, L. E. & LARDY, H. A. (1949.) **A study of the metabolic activity of bull semen and spermatozoa in relation to their fertilizing ability.**—*J. Anim. Sci.* **8.** 265-270. 242

No correlation was found between fertility and the metabolic rate of semen and washed spermatozoa when expressed as the oxygen consumption per cell. Oxygen consumption did not decrease during the second hour nor on the addition of glucose. On account of the consistently low rates of respiration obtained in this experiment, it is suggested that it should be repeated with spermatozoa having a higher rate of metabolism.—E. EDEN.

WHITNEY, L. F. (1947.) **Ovarian transplantation in dogs.**—*Vet. Med.* **42.** 30-32. 243

The technique of an ovarian transplantation is described which was performed on a Dalmatian bitch from an aged Cocker spaniel when both were in oestrus. The Dalmatian conceived at the next oestrous period and two puppies were born. It is claimed that this was a successful, fertile transplantation and that the procedure, as shown by the histological appearance of a previous attempt, rejuvenates the aged ovarian tissue with the development of numerous follicles.—K. G. TOWERS.

HAGGQVIST, G. & BANE, A. (1950.) **Polyploidy in rabbits, induced by colchicine.**—*Nature, Lond.* **165.** 841-843. 244

Polyploidy has been induced in the rabbit by treating recently fertilized ova with a weak colchicine solution, one litter of seven young having been born to a doe so treated. Four of the litter died early but three have survived for six months. Measurements of the red blood corpuscles were used to determine the presence or absence of polyploidy. One of the survivors had normal red cells but in the other two, a male and a female, the red blood corpuscle volume was 1·5 times the value for normal rabbits and both are considered to be triploids. Their growth rate was extremely rapid and the male became sexually mature at five month of age. No disturbance of spermatogenesis has been noted although measurements of the volume of the sperm nuclei, when compared with normal sperm, gave the ratio 1.45 : 1·00.—J. A. NICHOLSON.

CASIDA, L. E. & WISNICKY, W. (1950.) **Effects of diethylstilbestrol dipropionate upon postpartum changes in the cow.**—*J. Anim. Sci.* **9.** 238-242. [Authors' summary copied *verbatim.*] 245

The effects of diethylstilbestrol dipropionate upon postpartum changes in the genital organs and upon subsequent breeding efficiency has been studied in 60 purebred Holstein cows. Injection of 20 mg. of the hormone within 9 hours after calving failed to produce a demonstrable effect on the intervals from calving until (1) involution of the uterus (2) first succeeding ovulation, or (3) first succeeding estrus. No effect of treatment was shown upon the occurrence of cystic ovaries or the percentage of cows conceiving upon first service. Ovulation, on the average over all cows, occurred 25·4 days earlier than the first postpartum estrus ; 68 per cent. of the cows showed at least one "quiet" ovulation before the first estrus. Older cows (fourth and later calving intervals) tended to show longer intervals from parturition to estrus and to ovulation than did younger cows.

BOYD, W. L. & SELLERS, A. F. (1948.) **Some observations on postparturient cows in four separate herds, as related to expulsion of their fetal membrances.**—*Cornell Vet.* **38.** 263-266. 246

The authors made observations following 552 pregnancies in four herds over a four year period. None of the animals had been vaccinated against *Brucella abortus* and one herd contained reactors to the agglutination test. Foetal membranes were said to be retained if

they were not expelled within 12 hours of parturition. Retention occurred in 69% of 13 cases of abortion or stillbirth out of a total of 51 pregnancies in the agglutination positive herd and in 50% of 6 cases out of 92 pregnancies, 66·7% of 12 cases out of 273 pregnancies and none of 5 cases out of 136 pregnancies in the negative herds. Retention did not occur in any of the cases of twin birth or abortion in any of the herds.

In the positive herd there were 14·8% retentions out of 27 pregnancies within the range 274-291 days. The corresponding figures for the negative herds were 3·6% of 56, 4·3% out of 185 and 5·7% out of 105. In the positive herd there were 33% retentions out of 9 pregnancies outside the above range, and in the negative herds the figures were 10·3% of 39, 13% of 53 and 13·6% of 22.

The conclusion is that retention rates are high in abortions, stillbirths and viable pregnancies terminating outside the 274-291 day range, regardless of the herd agglutination status, whereas the retention rate was about three times greater in the positive herd than in the other herds in the case of normal pregnancies terminating within the range 274-291 days.—E. J. H. Ford.

Dimock, W. W. & Bruner, D. W. (1949.) **Barren broodmares.**—*Circ. Ky agric. Exp. Sta.* No. 63. pp. 15. **247**

The brood mares are examined for pregnancy 60-90 days after the close of the breeding season, and those not pregnant are studied to determine the condition of their reproductive organs. After examination these can be grouped according to the conditions found in the genital tract as those which appear normal, those with clinical evidence of inflammation and infection, those with slight evidence of infection, and those with evidence of ovarian disturbances.

The following bacteria have been isolated from the genital tract of mares and a brief description of each is given :—*Salmonella abortus-equi ; Corynebacterium equi ; Bact. equirulis ;* micrococci, chromogenic rods, moulds, and actinomycetes ; streptococci ; staphylococci ; *Klebsiella pneumoniae* var. *genitalium ; Bact. coli ; Pseudomonas aeruginosa.* The streptococci occur most commonly, but the others may assume important roles in producing sterility. Antibiotics, particularly penicillin, have been used extensively for the streptococcal infections. Some mares become infected because the conformation of the perineal region facilitates the entrance of bacteria normally found on the external genital organs, and a corrective operation is described. It has been found that the configuration of the pelvis and perineal region is largely inherited, and that many cases of infection of the genital organs originate at the time of parturition.

The pathological and functional conditions described are cystic ovaries, fibrocystic ovaries, small hard ovaries, ovarian tumours, and non-oestrous mares. Lines of treatment are suggested in each case.—J. O. L. King.

Bonfert, A. (1950.) Sterilitätsbekämpfung im Zusammenhang mit der Besamung von Rindern. **[Sterility control in connexion with artificial insemination in cattle.]**—*Dtsch. tierärztl. Wschr.* **57.** 205-208. **248**

A system is described for the early recognition and treatment of sterility as part of an insemination programme. Results are given of treatment of endometritis and cervicitis with various preparations containing Lugol's iodine.
—Roy Mack.

Hutt, F. B., Rickard, C. G. & Field, R. A. (1948.) **Sex-linked hemophilia in dogs.**—*J. Hered.* **39.** 3-9. **249**

Puppies of 6-13 weeks of age with lameness and swelling of the joints caused by haemorrhages, all had increased stability of the platelets, prolonged coagulation time and eventually bled to death. These cases only occurred among males and mating experiments indicated that this haemophilia observed in dogs was a sex-linked recessive factor as in man.
—E. Eden.

See also abstr. 59 (artificial insemination and trichomoniasis); 152 (manganese and reproduction).

ZOOTECHNY

Turbet, C. R. (1949.) **The acclimatization of European breeds of cattle in the tropics.**—*Agric. J. Fiji.* **20.** 70-74. **250**

Fiji has no indigenous cattle and has built up its herds entirely by imports. Owing to the idea that European strains would not stand the climate, most of these have been zebus, principally Nellores ; but properly managed, European cattle will thrive and the best dairy herds consist entirely of pure bred European strains. Mixed herds of Friesian and Jersey average 169·5 lb. butter fat which compares well with figures from similar herds in Queensland. Carcass weights for four-year-old steers are about 600 lb.

An essential part of the management of

herds of European breeds is protection against tick-borne diseases, piroplasmosis and anaplasmosis, and contagious diseases against which the European strains have no hereditary immunity. Mid-day shade is also important, and iron roofs are to be deprecated unless painted with aluminium paint or whitewashed. Rain does the cattle no harm unless it causes sufficient mud to prevent them lying down. Normally, tropical pastures contain only a rank, fibrous growth of little nutritional value, but they can be improved. It is important to supply ample minerals as these are usually deficient in tropical soils, especially lime, phosphorus and sodium chloride.

Jerseys and other breeds with red or dark coats are best, as white coated animals are susceptible to sunburn. Cross breeds are also successful if care is taken to select the zebu parents from good milch strains and to cull each generation rigorously.—R. MACGREGOR.

CENA, M. & COURVOISIER, P. (1950.) Die Reflexionseigenschaften des Felles bei der Schweizer Braunviehrasse. [**Sunlight reflection (albedo) of the skin of the Swiss Brown cattle breed.**]—*Schweiz. Arch. Tierheilk.* **92.** 85-97. [English, French and Italian summaries.] **251**

The relation between the amount of light which falls on the skin and the amount reflected from it is called the albedo. This was measured by means of a photo-electric cell, technical details of which are given. Colour filters were used to determine reflection of the various components of sunlight. Values obtained were 10% in the visible and 25% in the ultra-red light rays. Hence 90% of visible and 75% of ultra-red light waves are absorbed. The importance of this absorption is discussed.—ROY MACK.

TAZEWELL, E. R. & GREENOUGH, P. R. (1950.) **Dehorning of cattle.**—*Vet. Rec.* **62.** 325-329. **252**

The various methods of dehorning adult cattle are discussed and the authors' preference for coarse embryotomy wire as the cutting instrument is explained. The paper is practical and much useful advice is given, especially with regard to the utilization of lay assistance when large numbers of animals are to be treated.—K. G. TOWERS.

LONGLEY, E. O. (1950.) **Electroplectic anaesthesia in animals and man.**—*Brit. vet. J.* **106.** 250-265 & 283-291. **253**

Electroplectic anaesthesia (E.P.A.) refers to the type of anaesthesia produced by brief applications of heavy current for periods of a fraction of a second to a few seconds. Its possibilities and requirements in animals are discussed and a plea is made for further practical trials. L. carried out experimental studies on the rabbit and cat and gives his observations on man and on the electrical stunning of slaughter pigs and sheep and of dogs.

After passage of an electric current there is instantaneous loss of consciousness, an epileptiform convulsion and a period of complete relaxation and anaesthesia with amnesia. (in man 5 min., in dogs 2-4½ min., in pigs 1-2 min., in rabbits 1 min.) A safety factor of 100% with E.P.A. is claimed.

The apparatus required is briefly described and methods of application to animals suggested. The use of electricity in slaughtering animals is considered and the customary conditions of constant voltage criticized, it being emphasized that constant current is the important requirement.—K. J. HILL.

EASTOE, R. D. & GODLEE, A. C. (1950.) **Electric fences : a suitable type for sheep.**—*Agric. Gaz. N.S.W.* **61.** 153-154. **254**

Trials to determine the most suitable type of electric fence to provide a temporary enclosure for grazing sheep were carried out at Hawkesbury Agricultural College, N.S.W.

A single plain wire, placed 21 inches above the ground was useless. A few sheep escaped from a plot with boundary wires 12 in. and 27 in. above the ground. Plain wires 9 in. and 24 in. from the ground were fairly effective, but barbed wires at these levels gave the most satisfactory results. Three wires at 9 in., 16·5 in. and 24 in. were sometimes necessary.

None of the methods tested was completely effective. Efficiency is affected by the temperament of the sheep handled, the dryness of the surface soil and the dryness and density of the sheep's wool.—A. G. CULEY.

BRIGGS, H. M. & GALLUP, W. D. (1949.) **Metabolism stalls for wethers and steers.**—*J. Anim. Sci.* **8.** 479-482. **255**

The construction of a two unit stall for wether lambs which has proved satisfactory in studies on nitrogen and mineral balance is illustrated. The lambs are held by a yoke tie at all times. The floor is of wood with a hole in the centre connected to a glass funnel leading directly into a urine collection bottle. There is a small screen in the funnel to guard against the contamination of the urine. The faeces are collected in metal trays fitted to the rear of the stall floors, and the fronts are sloped to discourage the lambs from stepping back. The length of the stall can be adjusted by moving

the food trough and yoke, and the width decreased by using false sides. The food boxes are replaced by water containers after each feed.

A modification of the above for steers is described, in which the urine is collected by means of a rubber funnel strapped to the steer with a harness.—J. O. L. KING.

ANTHONY, D. J. (1950.) **Pigs and pig production.**—*Vet. Rec.* **62.** 417-421. **256**

In a paper covering the more general aspects of pig-keeping, the author welcomes the increase in number of small pig-keepers, and the keeping of pigs by general farmers. Listing the numerous by-products of pig production, he emphasizes the value of rearing pigs wherever possible in Great Britain, importing the necessary feeding-stuffs For bacon production he recommends the Large White, Welsh, and Large Black breeds, or crosses of these, as these breeds may produce up to 17 ribs, giving a longer bacon side. Other breeds do not exceed 14 ribs, and should be used for pork production. He emphasizes that the quality of bacon is more the result of curing than of breed.

On the subject of pig diseases, it is interesting to note that the incidence of TB. which was fairly constantly 11% before the second world war, and fell to 4% during the war, is returning to the pre-war level. He names pneumonia as the commonest disease condition of pigs, with TB. second, and nephritis and nephrosis third. He notes that *Erysipelothrix rhusiopathiae* infection is now more commonly seen without seasonal incidence in adult pigs, causing arthritis. He is able to cast no further light on the aetiology of "oedema of the bowel." Together with many others, he deprecates the use of the "Danish type" of piggery for rearing young stock up to weaning. The incidence of many piglet diseases is decreased by allowing the animals access to pasture.—R. M. LOOSMORE.

BRUCE, H. M. & PARKES, A. S. (1948.) **Feeding and breeding of laboratory animals. VIII. Breeding of guinea-pigs.**—*J. Hyg., Camb.* **46.** 434-437. **257**

A small colony of 42 monogamously mated pairs of g. pigs was studied and breeding records were reported for 20 months. Results from 1,240 young comprising 324 litters were reported. Animals were maintained satisfactorily on cubed food, hay and water. Average litter size was 3·8 ; larger litters had smaller birth weights and grew more slowly ; 69% of all litters were weaned without loss and 85% of young born were reared. Total mortality before weaning was 15·4% and was related to size of litter. Fertile mating took place at 74% of *post-partum* oestrous periods.—P. H. HERBERT.

See also absts. **148** (aphosphorosis and grassland conditions); **149** (mineral deficiency in pasture herbage).

TECHNIQUE AND APPARATUS

PLASTRIDGE, W. N., WILLIAMS, L. F. & ROMAN, J. (1949.) **An improved method for the preparation of *Vibrio foetus* agglutination antigen.**—*J. Bact.* **57.** 657-658. **258**

V. fetus agglutination antigen was produced in relatively large amounts by growth on solid "thiol medium" in an atmosphere of 5-10% CO_2.—L. M. JONES.

WHITE, R. W. (1950.) **Digest culture media using paw-paw (*Carica papaya*) in the tropics.**—*Brit. vet. J.* **106.** 201-204. **259**

The milky exudate from the skin of unripe paw-paw fruit is rich in the enzyme, papain. The fruits should be scarred lightly, as deep cutting allows the exudate to seep away in the pulp ; the exudate is then allowed to coagulate after which it is desiccated and ground to a powder. Digest medium prepared with this powder is suitable for cultivation of bovine contagious pleuropneumonia organisms, *Brucella abortus*, Gram-positive and Gram negative bacilli and micrococci. It is not destroyed by high temperatures, *i.e.*, up to 65°C. or by acidity below pH 8·4. 10 g. of the powder will digest 1·5 lb. minced beef in three and a half hours. Attempts to extract the pure enzyme from the powder were unsuccessful.

—R. MACGREGOR.

WHITLOCK, H. V. (1950.) **A technique for counting trematode eggs in sheep faeces.**—*J. Helminth.* **24.** 47-52. [Author's summary copied *verbatim*.] **260**

A technique is described for the flotation and enumeration of trematode eggs. A special sampling and mixing pipette has been designed. The flotation fluid is a solution of potassium mercuri-iodide (K_2HgI_4). A modified McMaster egg-count slide, or else a calibrated sliding top-piece apparatus is used for counting the eggs and estimating the number per gramme of faeces. The apparatus is illustrated and described.

RICHARDS, O. W. (1949.) **Some recent advances in microscopy.**—*Trans. Amer. micr. Soc.* **68.** 292-303. **261**

The literature on this subject between

1945-48 is reviewed. Mention is made of advances in different types of microscopy such as infrared, ultraviolet, polarization, fluorescence and phase microscopy. Improvements in illumination, microtomy and in other allied fields are also discussed.—E. EDEN.

RICHARDS, O. W. (Undated.) **Biological phase microscopy.**—*Cold Spring Harbor Symposia on Quantitative Biology.* **11.** pp. 208-214. **262**

A historical outline of the development of phase microscopy is given. Details of the construction of the microscope are described. It is a useful tool, especially for examining living cells and to illustrate this point several examples with photographs are presented.—E. EDEN.

NORTH-LEWIS, D. (1950.) **Investigation and trials with insulated containers for the transport of semen.**—*Brit. vet. J.* **106.** 318-321. [Author's summary slightly modified.] **263**

In Kenya, where semen has to be distributed in relatively small amounts, using rail and road vehicle transport, a cheap method by which semen can be transported at low temperatures is an essential. A "parrot cage" carrier for thermos flasks has been evolved which, because the contents are patent and obvious to illiterate persons who have to handle the packages, has reduced the rate at which thermos flasks are broken to an insignificant figure. Such a carrier can be made locally from thick wire and a disused inner motor rubber tube, at a very low cost.

Wide-mouth thermos jars with aerated rubber packing between the glass and metal, and a metal container insulated by baked-spun rubber, gave good results, but were too costly for large-scale use.

ANON. (1949.) **Safe electrically-heated equipment.**—*Brit. vet. J.* **105.** 430. **264**

As it is advisable to keep animals warm during an operation and convalescence, an electrically heated low-voltage blanket has been designed. With this type of blanket there is no danger of shock. The cover is made of plastic material, easy to clean and resistant to most chemicals.—E. EDEN.

TEUSCHER. (1949.) Der Kaiserschnitt (Sectio caesarea) beim Schwein. **[Caesarean section in sows.]**—*Mh. Vet.-med.* **4.** 183-186. **265**

In 21 out of 30 cases the indication for operation was pelvic deformity caused by osteomalacia. Details of the technique used are given.—ROY MACK.

RUBINSTEIN, M. A. (1948.) **Aspiration of bone marrow from the iliac crest.**—*J. Amer. med. Ass.* **137.** 1281-1285. [Author's summary copied *verbatim.*] **266**

Bone marrow can be obtained easily, safely and repeatedly from the iliac crest. It may provide information at times not obtainable from the sternal aspiration. The step by step technic of aspiration of bone marrow from the iliac crest is described and its advantages versus the sternal technic are discussed.

The diagnostic advantages of iliac versus sternal bone marrow studies were seen especially in cases of infiltrative diseases of the bone marrow such as metastatic lesions of various neoplastic diseases, and in some instances of multiple myeloma.

MCCLYMONT, G. L. (1950.) **A small diameter ruminal fistula and cannula for cattle.**—*Aust. vet. J.* **26.** 140-141. **267**

An operation is described for the insertion of a small diameter ruminal cannula into cattle. Such a cannula is suitable for digestion studies involving the removal of rumen liquor or gas samples.— R. L. REID.

MCCLYMONT, G. L. (1950.) **A note on the establishment of carotid loops in cattle.**—*Aust. vet. J.* **26.** 138-139. **268**

A description is given of an operation for the establishment of carotid loops in cattle. This method of obtaining arterial blood has considerable advantages over existing methods, particularly when metabolic studies are involved.
—R. L. REID.

MISCELLANEOUS

BERG, H. (1948.) Wetter und Krankheiten. **[Weather and disease.]** pp. iv + 140. Bonn : H. Bouvier & Co. DM. 6.50. **269**

This small book, written by a geophysicist, gives a critical account of the possible relation between disease and weather conditions. The difficulties which are met with in attempting to show the influence of meteorological conditions on the occurrence of disease are stressed and there are sections dealing with statistical analysis. Although there exist records which show a definite correlation between weather and certain diseases, including eclampsia in pregnancy, poliomyelitis and diphtheria and which also suggest correlation in the case of certain other diseases, there is little exact knowledge of the subject. The way in which meteorological factors exert their effect is not known.

Apart from references to some work on experimental animals, the book is concerned entirely with disease in man.

There is a bibliography, an appendix containing formulae for the calculation of probability and a number of maps and drawings.

—E. G. WHITE.

KESTER, W. O. & MILLER, E. B. (1948.) **Veterinary aspects of atomic explosion.**—*J. Amer. vet. med. Ass.* 113. 325-329. 270

The new entity from an atomic explosion is injury from the ionization of the tissues giving rise to radiation sickness. Radiations may be absorbed from external sources or from internal sources as when radio-active material enters the body by ingestion, inhalation or through a break in the skin. Of the total radiation damage, 99% occurs simultaneously with the explosion, the remainder occurring from residual contamination.

The radiations consist of α- and β- particles, γ- rays and neutrons. Alpha and β particles have little penetrating power and are dangerous only if entrance to the body is gained through ingestion, inhalation or through wounds. The γ- rays and neutrons are deeply penetrating and have properties similar to X-rays. Neutrons are also able to induce radio-activity in certain elements which they encounter.

It is impossible to differentiate between animals lethally and sub-lethally exposed to radiations. The peak death rate occurs 2 to 3 weeks following explosion. Provided proper precautions are taken, rescue and salvage parties can work in comparative safety in contaminated areas, but these must be kept free from unauthorised persons.—J. A. NICHOLSON.

DEL ROSARIO, L. J. (1949.) **Can male ducks be caponized for profit?**—*Philipp. Agric.* 32. 261-264. 271

Surgical caponization resulted in greater gain in weight, better utilization of food, and a higher dressing percentage. The quality of the flesh was not altered. It is doubted whether the procedure is profitable.—ROY MACK.

REPORTS

I. ROSE, A. L. (1947.) **Australia. Northern Territory. Annual report of the chief veterinary officer, 1946-47, Animal Industry Branch, Northern Territory administration.** pp. 10. Alice Springs. [Mimeographed.] 272

II. ROSE, A. L. (1948.) **Australia. Northern Territory. Second annual report, 1947-48, (covering activities for the year ending 30th June, 1948), Animal Industry Division, Northern Territory administration.** pp. 16. *Ibid.* [Mimeographed.] 273

III. ROSE, A. L. (1949.) **Australia. Northern Territory. Third annual report, 1948-49, (covering activities for the year ending 30th June, 1949), Animal Industry Division, Northern Territory administration.** pp. 19. *Ibid.* [Mimeographed.] 274

I, II & III. These reports of "a new and rapidly growing organization" deal with staff, statistics of animal population including exports and imports, improvement and extension of travelling stock routes and roads, and contain notes on road transport of cattle by means of "road trains".

Outbreaks of BOVINE CONTAGIOUS PLEUROPNEUMONIA are recorded. All cattle moving from areas north of 20° S. latitude are vaccinated; 70,000 were involved during 1949.

A survey of the incidence and types of PIROPLASMOSIS was begun. Special investigations are being made of KIMBERLEY HORSE DISEASE (WALKABOUT DISEASE) and BIRDSVILLE DISEASE. CONTAGIOUS PNEUMONIA OF PIGS was reported.

PLANT POISONING occurred following ingestion of the leaves of ironwood (*Erythrophleum laboucherii*), rock fern (*Cheilanthus tenuifolia*) which caused "staggers," Button grass (*Dactyloctenium radulans*) which is cyanogenetic, and *Eremophila latrobei* which is responsible for GEORGINA RIVER DISEASE.

The geographical distribution of *Boophilus microplus* in Northern Australia is noted.

Reports of tick infestation of cattle in Central Australia were followed by a survey which showed that a low percentage of cattle carried light infestations with *Amblyomma triguttatum*, a tick usually found on native marsupials. No *B. microplus* were found.

—H. McL. GORDON.

ROBINSON, M. C. (1948.) **Union of South Africa, Johannesburg. Report of Director, Abattoir and Live Stock Market Department for the period 1st July, 1947, to 30th June, 1948.** pp. 17. Johannesburg: Radford, Adlington Ltd. 275

The abattoir dealt with over 700,000 animals; some 200,000 being cattle, 122,000 pigs and the remainder sheep. Supplies of slaughter animals were erratic and only fair for most months, in spite of hopes that the position would improve: the deterioration was due, apparently,

to the methods employed in implementing the Marketing Act. A commission is now inquiring into the working of this Act, and it is hoped that remedies will be found. Hides and skins are now controlled in the same way as meat and meat products and powers are taken for their compulsory purchase.

MASTITIS is prevalent. Of 1,771 samples taken from shops selling raw milk 512 were found to be contaminated. In 14 herds, the cows were individually tested and 18% were found to be infected. 1,200 animals, all the property of the Council, were given anthrax spore vaccine, and no cases of ANTHRAX occurred among them. 739 dairy herds, containing in all 38,427 cows, were examined and four cows with clinical TB. were slaughtered. 197 samples of milk were examined for TB. and five were positive. Four of the cows responsible were traced and slaughtered, but one was not discovered.

Ten districts were placed under F. & M. DISEASE control.—R. MACGREGOR.

ROBINSON, M. C. (1949.) **Union of South Africa, Johannesburg. Report of Director, Abattoir and Live Stock Market Department for the period 1st July, 1948, to 30th June, 1949.** pp. 16. Johannesburg : Radford, Adlington Ltd. 276

About 800,000 animals were slaughtered in the City abattoir; some 200,000 cattle, 218,000 pigs and the remainder sheep and goats. Only pigs had increased over the previous year's figures, cattle being slightly down and sheep very much so. 2,379 tons of meat were condemned. Cysticercus caused the condemnation of 15,000 beef carcasses and the offal from 6,000, and 6,000 pork carcasses and offal from 10,000. C. bovis is on the increase here as elsewhere in the world. For TB., 150 beef carcasses and 700 pork carcasses were condemned. Extensive bruising caused the condemnation of 37,000 tons of beef (1,000 whole carcasses) and 4,000 lb. of pork (205 whole carcasses).

782 samples from shops selling raw milk were examined for MASTITIS and 264 were found positive. In 22 herds the cows were individually tested for MASTITIS involving the examination of 1,416 samples, of which 276 were positive. 1,072 dairy herds comprising 56,312 cows were inspected and two cows with TUBERCULOUS MASTITIS were killed. 472 samples of milk were examined for TB. and four were found positive, the cows responsible being killed. A severe outbreak of ANTHRAX in one herd was promptly dealt with. 1,300 animals owned by the City were given ANTHRAX spore vaccine. CONTAGIOUS ABORTION infects the herds to the extent of about 15%.

INFECTIOUS EPIDIDYMITIS AND VAGINITIS OF CATTLE, a recent invader from Northern Territories, has appeared in the main dairying area from which the city draws its milk supplies. —R. MACGREGOR.

See also absts. 12 (report of TB. committee, Australia); 279 (report on leptospirosis in Palestine).

BOOK REVIEWS

FORSYTHE, S. M. (1949.) **The story of bovine tuberculosis.** pp. xv+179. London & Melbourne : Oak Tree Books, Ltd. 10s. 6d. 277

This book is written for the layman. The manner of presentation is sensational and a good case is spoiled by exaggeration. Its theme is the danger of transmission of infection from cattle to man *via* milk. One's faith in the credibility of the author is badly shaken towards the end of the book where six pages are devoted to supporting the claim that a secret remedy, the main constituent of which is sugar, is efficacious in eradicating tuberculosis from infected dairy herds.—M. C.

HARRIS, H. J. [M.D., F.A.C.P.] (1950.) **Brucellosis (Undulant Fever). Clinical and subclinical.** pp. xxiv+617. New York : Paul B. Hoeber, Inc. 2nd Edit. revised & enlarged. $10.00. 278

The greater part of this book deals with clinical aspects of brucellosis in man, particularly with chronic cases with a multiplicity of symptoms in which definite diagnosis is difficult. Some veterinary aspects of the disease are discussed especially as they affect prophylaxis in man. It is interesting to note that the author does not consider any of the methods of vaccination of cattle which have so far been devised to be uniformly effective or without important drawbacks. He quotes Huddleson and also a personal communication from Tiedeman to the effect that the strain 19 organism may cause disease in man, but the supporting evidence is unconvincing.—M. C.

BERNKOPF, H. (1948.) **Report on bovine leptospirosis in Palestine submitted to the Agricultural Research Committee by the Board.** pp. 23. Amsterdam : North Holland Publishing Co. Fl. 1.20. 279

The sera of 796 cattle at abattoirs were

tested for agglutinins against the bovine strain and 8·5% were positive in dilutions of 1 : 200 or higher. A strain from a human case was found to be identical with the bovine strain. 509 rats were also tested and none were positive. The organisms survived for 28 hours at refrigerator temperature in the organs of infected animals.—M.C.

WELLS, B. B. [M.D., Ph.D. Professor of Medicine, University of Arkansas.] (1950.) **Clinical pathology. Application and interpretation.** pp. xi + 397. Philadelphia & London : W. B. Saunders Co. 30s. **280**

With the great expansion of the medical field, the physician has a difficult task to keep abreast of the advances made in clinical pathology, but since laboratory tests have come to play such an important part in arriving at a correct diagnosis, it is essential not only that the physician should be able to take the requisite samples, but also that he should understand and interpret correctly the laboratory reports when he receives them. This book will, therefore, be of great assistance to the busy practitioner since these two points are the main consideration. The actual laboratory procedures are not described and the book is written entirely from the point of view of the clinician.

The general plan is to discuss the clinical picture and then to describe the samples which should be sent to the laboratory and the information which can legitimately be drawn from the reports. In this way, the major infectious diseases, diseases of the gastro-intestinal tract, respiratory system, kidney and urinary tract, the blood and cardiovascular system and the endocrine system are dealt with, together with short chapters on the assistance the laboratory can give in surgical and obstetrical cases. A useful appendix gives some average normal values for blood and other body fluids and comments on the laboratory tests and findings.

The veterinary practitioner will undoubtedly find a great deal of useful information in this book, for he is concerned with the same problems as is his medical confrère, albeit in a somewhat different form, and the practitioner who, perhaps, has not a full laboratory service at his disposal will obtain great encouragement for the book makes it clear that a test-tube cannot replace correct clinical observation.

—J. A. NICHOLSON.

LEVER, W. F. [M.D. Instructor in Dermatology, Harvard Medical School.] (1949.) **Histopathology of the skin.** pp. xv + 449. Philadelphia, London & Montreal : J. B. Lippincott Co. 80s. **281**

This book should prove invaluable for pathologists whose field of activity is in any way connected with the diagnosis of skin disease. Although as the author states it is "principally for the benefit of pathologists" a histological discussion of each disease is preceded by a brief outline of the salient clinical features. The book is well written and is illustrated with photomicrographs and four colour plates all excellently reproduced. Besides the section concerned with skin disease there are sections giving details of biopsy technique and laboratory methods. Epidermal and mesodermal tumours are also dealt with in two sections. The extensive bibliography in which preference has been given to articles in English will readily enable readers to obtain addtional information.—JAMES H. HALE.

SCHARRER, K. (1950.) Die biochemischen Grundlagen der Tierernährungslehre. **[The biochemical principles of animal nutrition.]** pp. viii + 162. Stuttgart : Ferdinand Enke. DM. 14.--. **282**

The first few chapters deal with the biochemistry of carbohydrates, fats, proteins, vitamins and minerals. A chapter is also devoted to enzymes. The rest of the book is concerned with the practical aspects of animal feeding. Methods of determining the energy and nutritive value of foods are described and the relative merits of the various foods are discussed. This last section will prove interesting in the study of animal nutriton.

—E. EDEN.

MURRAY, P. D. F. [M.A., D.Sc. Professor of Zoology, University of Sydney.] (1950.) **Biology. An introduction to medical and other studies.** pp. viii + 600. London : Macmillan & Co. Ltd. 25s. **283**

The reviewer has long been of the opinion that the study of biology may only approach comprehensiveness insofar as that study takes notice of the myriad parts which form its vast mosaic. It is this botanical and zoological mosaic which contributes so much to the pattern of evolution. Herbert Spencer wrote that "in education we should proceed from the simple to the complex [what else is evolution?]. The mind develops. Like all things that develop it progresses from the homogeneous to the heterogeneous, and a normal training system, being an objective counterpart of this subjective process, must exhibit like progression. Its *rationale* involves, not only that we should proceed from the single to the combined in the teaching of each branch of knowledge, but

that we should do the like with knowledge as a whole". Basing our argument on Spencer's, and assuming that the mind of a University student has at least attained to the heterogeneous, it is surely an essentially evil thing for him to be introduced to biology by way of what are apt to be treated as distinct and almost unrelated sciences, *i.e.*, botany and zoology. On the other hand, the Universities, by virtue of their special degrees, tend to proceed from the combined to the single, which savours of too early specialization. The author's "Biology" is a tangible justification of the combined in the teaching of botany and zoology. The book travels smoothly over the evolutionary line from the simple living things, both plant and animal, to the complex ones, linking them together, comparing them, analysing them, and moulding them together into a delightfully logical synthesis. The whole is a sum of its parts and the parts, considered with balance and clarity, add up to a wholly praiseworthy book which is generously illustrated, well indexed and produced. Many "old-timers", on reading this book, will look back with some despondency to their early days spent with the unimaginative texts of the stereotyped manuals of the past. How can the intellect fail to be stimulated by chapter headings like these: The classification of animals—Grades of organization, The coelome and metameric segmentation, Invasion of the land by plants, Invasion of the land by animals, The land conquered by animals, Arboreal life and the evolution of man, Causal embryology, Growth, Behaviour, Irregular Nutrition, Fungi, Bacteria and viruses, Parasites. "Biology" is a textbook designed for the use of medical students, Higher Schools and Intermediate Science candidates. It is admirably suited for the biology of the Veterinary Colleges. Not only is the book a source of knowledge necessary for the passing of examinations, but it serves as a fount of culture as well.—C. HORTON SMITH.

MILKS, H. J. [D.V.M. Professor Emeritus, Formerly Professor of Therapeutics and Director of the Small Animal Clinic, New York State Veterinary College at Cornell University, Ithaca, N.Y.] (1949.) **Practical veterinary pharmacology, materia medica and therapeutics.** pp. xiv+720. London: Baillière, Tindall & Cox. 6th Edit. 76s. 6d. 284

The scope of this book has been increased in the sixth edition, and although it remains essentially a students' text, it now contains a body of information that is not collected together in any other single work in the English language. Its use as a reference book would be greatly enhanced by a more regular treatment of relevant literature.

Since earlier editions have been reviewed in this Bulletin, it is necessary to deal specifically, only with the actual additions. It is nevertheless clear that the text as a whole has benefited considerably from redrafting. The chapter on the sulphonamides has been considerably enlarged, and deals with blood concentrations, dosages and applications in a comprehensive manner. The chapter on antibiotics deals in some detail with penicillin, tyrothricin and streptomycin, although its brief notes upon other substances available for veterinary use are already out of date. The section on anthelmintics deals effectively with a wider range of substances than is commonly employed in practice in Great Britain, including N-butyl chloride. Substances in other chapters dealt with for the first time include the antihistamine drugs, British Anti-Lewisite, heparin, the phenylmercuric compounds and a variety of compounds of nutritional significance.

A chapter on biological diagnosis, prophylaxis and therapy is contributed by Zeissig, of the New York State Department of Health, and indicates the wide range of substances that appears to be commercially available in the U.S.A. at the present time, *e.g.* feline enteritis (agranulocytosis) antiserum.

—ALASTAIR N. WORDEN.

MIALL, S. [LL.D., B.Sc.] and MIALL, L. M. [B.A., F.R.I.C.], [Edited by.] (1949.) **A new dictionary of chemistry.** pp. ix+589. London, New York, Toronto: Longmans, Green & Co. 2nd Edit. 60s. 285

This dictionary is intended for the wide range of professional people who require from time to time a handy general work of reference to chemical matters. In addition to inorganic, physical and organic chemistry, the book deals with biochemistry and chemistry applied to geology and engineering, and provides brief biographies of the more famous figures in the history of science. The editors have been at pains to secure the services of chemists having especial interest in all these fields.

The first edition was published in 1940, but stocks were destroyed in an air raid that winter; the editors state that in bringing out this new edition they have corrected errors and brought the articles up-to-date. It is inevitable that in fields where there is much contemporary research, dictionary articles should be slightly out of step with current thought; the research

worker will certainly dispute some of the information relevant to his own particular line of work.

The reviewer can do no more than dip here and there, checking the points on which he has special knowledge, or putting himself in the position of, say, a general scientific worker looking for concise definitions and then finding that the word stoichiometry is not defined; omissions of this sort are relatively rare. In general, technical terms used in the text are also defined in the appropriate place.

The dictionary is not a mere set of definitions. The preparation and salient properties of elements and compounds are described, and in some instances the structural formula of a compound is given, together with notes on the principal uses, or, in the case of a drug, the pharmacological actions. The physical constants of the organic compounds referred to in the text are summarized in a table at the back of the book.

This book will be particularly useful to workers in sciences other than chemistry, since it covers such a wide field in a concise and intelligible manner.—F. B. LEECH.

PARPART, A. K. [Edited by.] (1949.) **The chemistry and physiology of growth.** pp. vii+293. New Jersey. Princeton University Press. $4·50. **286**

In this book will be found a collection of papers on various aspects of the growth problem, presented by ten eminent American authorities at a conference on "The Chemistry and Physiology of Growth" held at Princeton University in September 1946. The field covered is a wide one, varying from such topics as the synthesis of proteins, plant growth hormones, and the problems of organization to neoplastic abnormal growth and the functions of the adrenal gland. The editor has attempted to place the papers in connected sequence but although they all deal with the same subject, the problem of growth is so vast that with the present state of knowledge, it may be better to regard them simply as a collection of individual papers. In saying this, it is not to detract in any way from their importance or interest for each paper gives a comprehensive account of the particular problem discussed. As is pointed out, there is no single answer to the growth problem and at present an attempt to postulate a general theory of growth has little chance of success.—J. A. NICHOLSON.

FRANKLIN, K. J., D.M., F.R.C.P. [Professor of Physiology at the Medical College of St. Bartholomew's Hospital.] (1949.) **A short history of physiology.** pp. 147. London: Staples Press. 2nd Edit. 10s. 6d. **287**

The progress of physiology has been likened to a man climbing up a spiral staircase, the ground he covers remains the same but with each complete circle he progresses upwards owing to new ideas and techniques, and surveys a broader horizon. The aptitude of this simile is brought out by Professor Franklin's book, which traces the development of physiology from the sixth century B.C. He starts with the views put forward by Alcmaeon of Croton, who was one of the first to localize perception of sensations and thought within the brain. Inevitably the earliest conceptions of bodily function were deduction based upon anatomical examinations of the mammalian body. It is interesting to see how broad a biological view was taken by Aristotle, the forerunner of physiology rather than its exponent, but the chapters dealing with various schools of thought up to the seventeenth century illustrate the limitations of the eyes as practically the sole instruments of research. Progress was very slow; there was little on which to base conclusion beyond a knowledge of macroscopic anatomy, but the few experiments that are quoted illustrate how even the simple application of the experimental method can produce an insight which it is impossible to obtain in any other way.

The seventeenth century marks the beginning of modern physiology with the application of physics and chemistry to physiological research; from then onwards knowledge progressed with an ever increasing impetus. The improvement of the microscope at the beginning of the nineteenth century revealed the ultimate structure of the body, and led directly to the conception of the cell as the essential unit of the body. The author's task in selecting the pioneers of physiology was easy during the early stages, but during the nineteenth century progress was so rapid that the task of selecting those who had most influence upon physiological thought must have been far harder. He wisely stops short of the twentieth century for this would involve him in the distasteful task of selecting from his contemporaries. However, in future editions this may be attempted.

This 2nd edition contains extra information which has come to light since the 1st edition. The book is easy to read and absorbingy interesting. Anyone practising physiology should make himself acquainted with the history of his subject and Professor Franklin's exposition of

the development of experimental physiology presents an opportunity of doing so.

—A. T. PHILLIPSON.

BOOKER, C. G. [M.D., Ch.B., D.P.H., D.T.M., D.T.H., L.R.C.P, L.R.C.S., L.R.F.P.S. Railway Health Officer, South African Railways.] (1949.) **Public health bacteriology and parasitology.** pp. xiii + 254. Johannesburg: L. S. Gray & Co. (Pty.) Ltd. 35s. **288**

This is an excellent book written mainly for readers in South Africa and intended primarily for beginners. It contains much of general interest and importance to the bacteriologist and also to the general medical or veterinary practitioner.

The book, we are told, was prepared from a series of notes on which the health staff of the South African Railways have been trained for some years. The author states that its object was to deal concisely and in one volume with the public health aspects of the more important agents of infective and parasitic disease in South Africa.

In his preface the author states that very little previous knowledge on the reader's part "is assumed and considerable attention has been devoted to the systematic grouping of the most important causal agents and vectors of disease. These classifications are very simple and the characters given are often greatly curtailed to enable the student to grasp the essential differences between different groups of animals and plants rather than to serve as features of identification of any particular species."

One hundred pages are devoted to bacteriology and the remainder of the book to Public Health parasitology, including sections on protozoology, helminthology, entomology and a chapter on rodents which includes short notes on the vertebrates and their classification in general. There are 22 plates, most of them coloured and extremely well reproduced, and 86 diagrams mostly representing parasites.

A special feature of the book is the inclusion of 16 whole-page classification tables which enable the beginner to follow with the minimum of labour the classification of the various species described.

The author has a free and easy style and a gift for concise, clear description, which makes the reader's task an easy one. The book is well printed on thick paper and there is an excellent alphabetical index. It can be recommended to the veterinary student.

—D. S. RABAGLIATI.

ALBIEN, W. (1948.) Was gibt es Neues für den praktischen Tierarzt? [**Excerpts for practitioners from veterinary and medical journals in the German language from 1942-48.**] pp. 520. Hanover: Schlütersche Verlagsanstalt und Buchdruckerei. DM. 20. -. **289**

This digest of veterinary and medical literature from German, Austrian and Swiss journals, covering the period from 1942-1948 is intended for the veterinary practitioner.

The subject matter is divided into sections headed Controversies in Medicine; Skin Diseases; Surgery; Obstetrics; Sterility and Artificial Insemination; General Pathology and Therapy; The Major Epidemics and their Control; Veterinary Hygiene; Zootechny, Breeding and Diseases of Young Animals; New Pharmaceutical Preparations; New Books. There is also an alphabetical index.—E.G.

WENDER, L. [Edited by HINTON, M. A. C., F.R.S.] (1948.) **Animal encyclopaedia. Mammals.** pp. 266. London: George Allen & Unwin Ltd. English edition. 12s. 6d. **290**

In this little book the animals are arranged under their popular names in alphabetical order and a brief but accurate account is given of each. The listing of the animals under their popular names leads to some little difficulty in using the book at first. For example, if one wished to get an overall picture of the pig family it would be necessary to refer to many separate pages, namely p. 159 for Pigs; Pigs, Domestic; and Pigs True; p. 158 for Pigmy Hog; p. 222 for White-whiskered Swine, and Wild Boar; p. 101 for Indian Wild Boar; p. 147 for Oriental Wild Pigs, and so on, there being separate entries widely scattered through the book all dealing with members of the genus *Sus*. There is a good index of Latin names, a table of gestation periods and a system of classification of the mammals.

This work will be of great value to those who have occasion to find the correct Latin names of species often mentioned in literature under their popular names.—M. C.

LACHENSCHMID, B. (1950.) Leitfaden der Trichinenschau. [**Guide for *Trichinella* inspection.**] pp. ix + 173. Stuttgart: Ferdinand Enke. DM. 8. —. & D.M. 9.80. **291**

The purpose of this handy little book is to convey to the trichinosis inspector the technical knowledge required in this specialized branch of meat inspection. It consists of a theoretical part, a practical part and an appendix giving in condensed form legislation concerning meat

inspection in Germany. The theoretical part describes the anatomy of the pig, the biology of the parasite and the apparatus used for inspection. The practical part deals in detail with the actual technique of inspection, the taking of samples and the action to be taken by the inspector. There are 27 illustrations and an alphabetical index.—E. G.

SCHOENEWALD, F. S. [M.D. Berlin.] (1949.) **German-English medical dictionary.** pp. viii+241. London: H. K. Lewis & Co. Ltd. 27s. 6d. **292**

This dictionary can by no means be regarded as complete from a medical point of view even though, according to the preface, the words have been selected from 30,000 pages of English and American medical literature. An excellent feature is the illustration of the meanings of many words by carefully chosen phrases giving examples of their use.

The genders of the German substantives should have been given to assist a reader translating a German text.

The book is well bound and clearly printed on good quality paper.

[See also **1904** (to appear in the June issue) for review of the English-German part of this book.]—E. V. L.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review]

ABDERHALDEN, R. (1950.) Grundriss der Allergie. Theorie und Praxis. **[Guide to allergy.]** pp. 179. Basle : Benno Schwabe & Co. Sw. Fr. 14.50.

AGGELER, P. M., & LUCIA, S. P. (1949.) **Hemorrhagic disorders. A guide to diagnosis and treatment.** pp. xi+111. Chicago : The University of Chicago Press. London : Cambridge University Press. 75s.

COMROE, J. H., JR. [Edited by] (1950.) **Methods in medical research. Vol. 2.** pp. xvi+361. Chicago : The Year Book Publishers, Inc. $6.50.

CORWIN, E. H. L. [Edited by] (1949.) **Ecology of health.** pp. xii+196. New York : The Commonwealth Fund ; London : Geoffrey Cumberlege. 20s.

DOBBERSTEIN, J. (1950.) Richtlinien für die Sektion der Haustiere für Tierärzte und Studierende der Veterinärmedizin. **[Guide to dissection of domestic animals.]** pp. 111. Berlin : Richard Schoetz. 7th Edit. DM. 6.80.

FINK, R. M. [Edited by] (1950.) **Biological studies with polonium, radium and plutonium.** pp. xvi+411. New York & London : McGraw-Hill Book Co., Inc. 32s.

FISCHEL, W. (1949.) Leben und Erlebnis bei Tieren und Menschen. **[Psychology in animals and man.]** pp. 138. Munich : Johann Ambrosius Barth. DM. 12.40 or DM. 14.40.

FLÜCKIGER, G. & WALDKIRCH, E. v. (1950.) Kommentar zum Bundesgesetz betreffend die Bekämpfung von Tierseuchen und zur Vollziehungsverordnung zu diesem Gesetz. **[Commentary on the Swiss law of 1917 concerning the control of epizootics.]** pp. 224. Berne: Hans Huber. 4th Edit. Sw. fr. 12.80.

GRZIMEK, B. (1949.) Die Elefantenschule. **[School for elephants.]** pp. 236. Rottenburg Neckar : Deutsche Volksbücher. DM. 11.60.

HONEKER, A. (1950.) Die Krankheiten der Ziege. Heft 1 : Krankheiten des Verdauungsapparates. **[Diseases of goats. Vol. I. Digestive system.]** pp. 128. Dortmund : H. Wellershaus. DM. 3.30.

KARRER, P. (1950.) **Organic chemistry.** pp. 983. London : Cleaver-Hume Press. 57s. 6d.

KLARENBEEK, A. (1950.) De ziekten van de hond. **[Diseases of dogs.]** pp. xviii+330. Leiden : H. E. Stenfert Kroese's Uitgevers-Maatschappij N.V. Fl. 20.-.

KOLLER, G. (1949.) Hormone. **[Hormones.]** pp. 187. Berlin: Walter de Gruyter & Co. 2nd revised Edit. DM. 2.40.

MANNS-AU, H. S. [Edited by] (1950.) Das österreichische Veterinärrecht. **[Austrian veterinary law.]** pp. xi.+342. Vienna: Manzsche Verlags- und Universitätsbuchhandlung. Sch. 45.-. & Sch. 37.-.

MANSON-BAHR, P. H. [Edited by] (1950.) **Manson's tropical diseases. A manual of the diseases of warm climates.** pp. xiv+1136. London, Toronto, Melbourne, Sydney & Wellington : Cassell & Co. Ltd. 13th Edit. 45s.

MARTIN, C. R. A. (1950.) **Practical food inspection. I. Meat inspection. II. Fish, poultry and other foods.** pp. vii+322 ;

vii+308. London : H. K. Lewis & Co. Ltd. 4th Edit. 2 Vols. 18s. each.

MEYER, E. (1949.) Farbe und Abzeichen bei Pferden. **[Colour and markings of horses.]** pp. 88. Hanover : M. & H. Schaper. DM. 4.60.

MOSER, E. [Edited by WESTHUES, M.] (1950.) Leitfaden der Huf- und Klauenkrankheiten. **[Diseases of the feet in farm animals.]** pp. viii+293. Stuttgart : Ferdinand Enke. 2nd revised Edit. DM. 24.50 or DM. 27.--.

NUNGESTER, W. J., & WILLIAMS, P. G. (1950.) **An illustrated study aid for medical bacteriology.** pp. 92. Ann Arbor, Michigan : Ulrich's. $2.--.

PATZELT, V. & RAAZ, F. (1950.) Das Mikroskop und seine Nebenapparate im Dienst der Naturwissenschaften, Medizin und Technik. **[The miscroscope and its accessories.]** pp. 155. Vienna: George Fromme & Co. Sch. 3.50. & Sch. 4.-.

PERDRIX, J. (1950.) L'incubation et les maladies du poussin. **[Incubation and diseases of chicks.]** pp. 325. Paris: Vigot Frères. Fr. 1600.

RIMPAU, W. (1950.) Die Leptospirose. Eine kurze Darstellung für Aerzte, Tierärzte und Gesundheitsbehörden. **[Leptospirosis.]** pp. 157. Munich-Berlin: Urban & Schwarzenberg. DM. 10.--.

SECK, P. (1950.) Die Kokzidiose der Kaninchen und Hühner und ihre Bekämpfung. **[Control of coccidiosis in rabibts and fowls.]** pp. 71. Reutlingen: Oertel & Spörer. DM. 2.80.

SINGER, C. (1950.) **A history of biology. A general introduction to the study of living things.** pp. xxxv+579. New York: Henry Schuman. Revised Edit. $5.00.

SLUITER, C. P. (1948.) De dierlijke parasieten van den mensch. **[The animal parasites of man.]** pp. viii+441. Amsterdam: Scheltema & Holmema's Boekhandel en Uitgevers Maatschappij N.V. 5th Edit. F. 16.-.

STEINMETZER, K. (1949.) Pharmakologie für Tierärzte einschliesslich Verordnungslehre. **[Pharmacology for veterinarians.]** pp. viii +346. Vienna: Urban & Schwarzenberg. DM. 18.--.

TUBIANA, M. (1950.) Les isotopes radioactifs en médecine et en biologie. **[Radioactive isotopes in medicine and biology.]** pp. ix+391. Paris: Masson & Cie. Fr. 1800.

WIRTH, D., & DIERNHOFER, K. (1950.) Lehrbuch der inneren Krankheiten der Haustiere einschliesslich der Hautkrankheiten sowie der klinischen Seuchenlehre. **[Veterinary clinical medicine.]** pp. xx+1164. Stuttgart : Ferdinand Enke. DM. 85.- or DM. 89.-.

WOHLFROM, F. (1949.) Das Veterinärwesen. **[Veterinary science.]** pp. 77. Schwenningen a. N. : Herbert Holtzhauer. DM. 2.60.

ANON. (1950.) **Handbook on the handling of animals and first aid.** pp. 172. London: National Veterinary Medical Association of Great Britain and Ireland. 5s.

Printed in Great Britain by C. Burrell & Son, Chertsey, Surrey